THE IRON AGE

THE NATIONAL METALWORKING WEEKLY August 3, 1950

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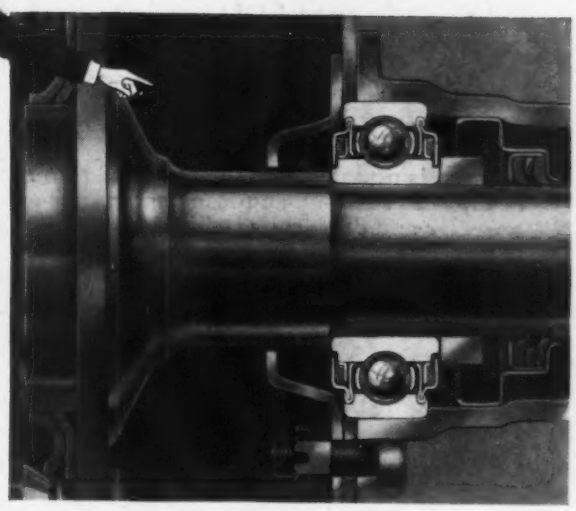

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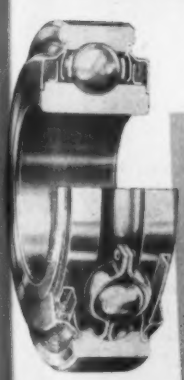

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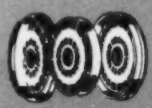

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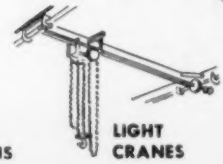

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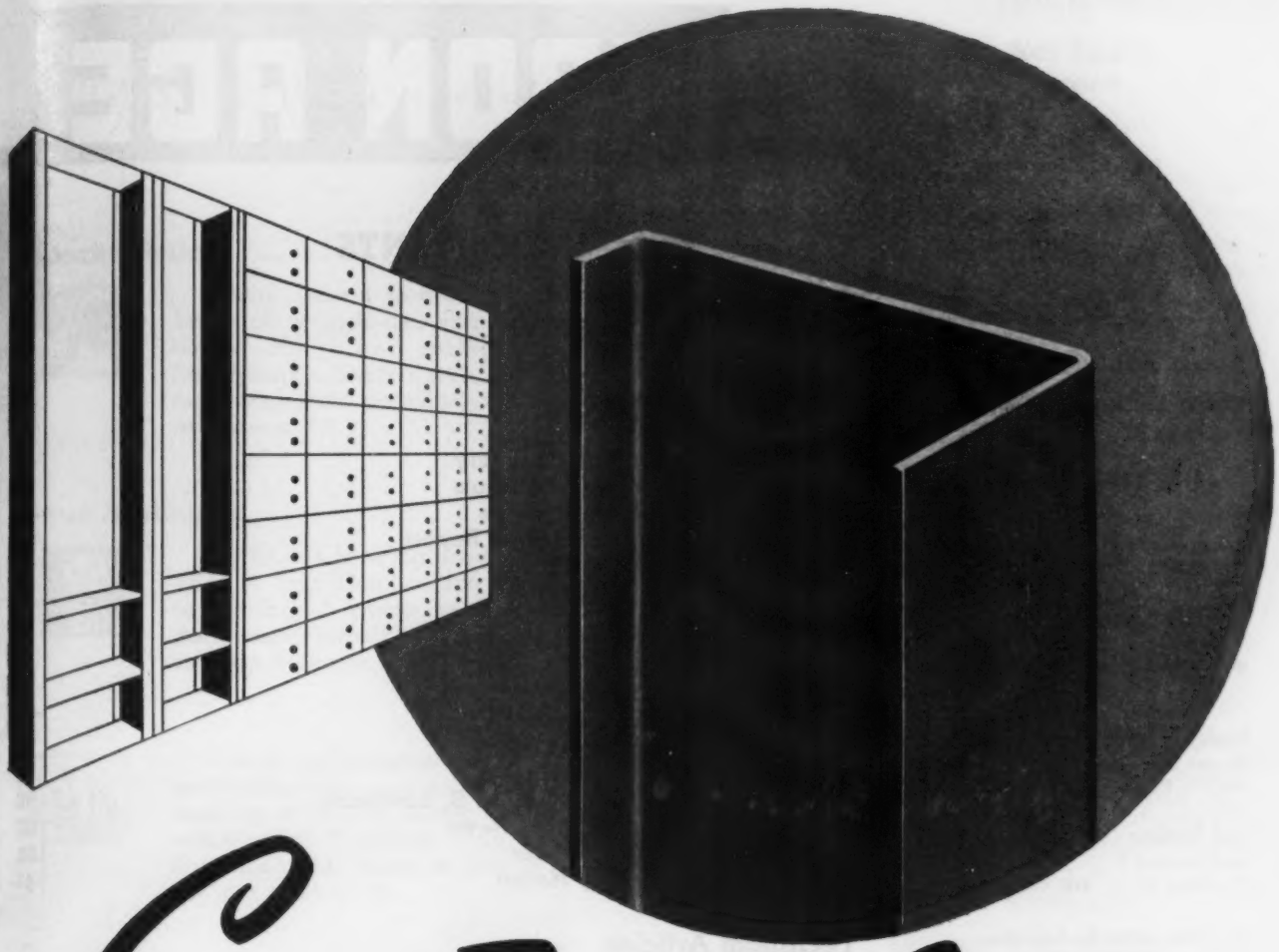
Also: Foundry Equipment • Railroad Equipment • Metal-Working Machinery • Swenson Evaporators and Spray Dryers • Food Freezers



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THE IRON AGE

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AUGUST 3, 1950 • • • VOL. 166, No. 5

Special Article

Russia, second to the United States in steel production, broke all records last year despite the lack of quality materials. Alloys and coking coal are still in short supply. Significantly, North Korea and Manchuria are Russia's two most important satellites—steelwise. Part I of a two-part article.—p. 67.

Issue Highlights

Ductile iron is being used for machinery castings weighing up to 30 tons. Composition and heat treatment are the keys to the broad range of properties obtainable. Vibration dampening tests illustrate how this versatile material fills the gap between cast iron and cast steel.—p. 75.

One of the fastest-growing commercial processes for extending iron ore reserves through beneficiation of low grade deposits is Heavy Media Separation. HMS last year accounted for 2 million tons of shipments from the Lake Superior area. Average cost of hematite beneficiation was 10¢ per ton.—p. 79.

Detroit Editor Walter Patton slashes the veil of secrecy surrounding the automobile industry's interest in the so-called resin-sand or Croning process for high production of castings to close tolerances. He tells why the industry has probably put more than $2 million into it already, outlines general changes that may come in the whole foundry industry.—p. 89.

Second quarter earnings of the nation's eight top steel producers rose 33.3 pct above first quarter profits. Their earnings for the first half of 1950 are 18 pct above those of the first half of last year, which had been considered a remarkably good period.—p. 93.

A new firm is being formed to produce titanium and titanium alloy products. Joint owners are Remington Arms Co., Inc., and Crucible Steel Co. of America. Sales are now being handled from Remington's offices in Bridgeport, Conn., but all operations are slated to be moved to Pittsburgh.—p. 95.

Coming Next Week

Part II of the two-part article on Russian steel production reveals that the Soviet's Far Eastern steel facilities are meagre. Main production and consumption are in the Ukraine and Ural areas. Few standard alloy steels are being produced and most tool steel production is of the straight carbon type. Beneficiation of iron ore is increasing.

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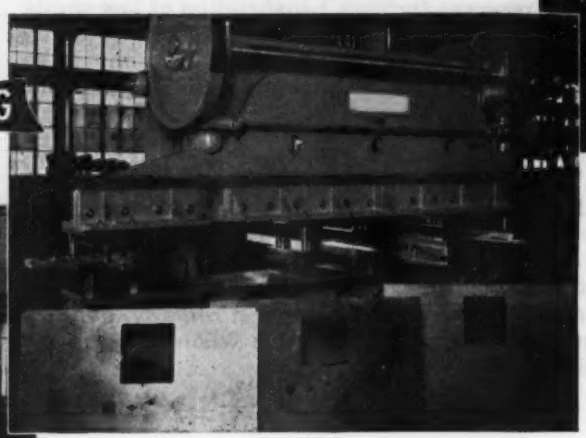

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Editorial

INDUSTRY VIEWPOINTS

A Word of Caution

BUSINESS has been doing such a good job of selling itself in the past year that a setback would be bad. Yet there is no better time for antibusiness people to do their worst than during a national emergency.

The pattern is simple. Just start a whispering campaign that industry isn't patriotic. Or that business needs to be controlled if the general welfare is to be advanced. It makes no difference whether these things are falsehoods to those who start them.

The size of the emergency has nothing to do with the potency of antibusiness propaganda. It can mushroom now as well as in a big war. It always gets its beginning along the same lines: Someone is profiteering; someone is not filling war orders first; someone is using war material for domestic purposes at the expense of the military.

These reports are never checked. The damage is done quickly. Maybe you think this editorial is too drastic. If you think that, remember some of the stories you heard before, during and after the last war.

Now is the time for all businessmen to see that any war or defense order gets attention pronto! Don't wait to be jacked up. When you are sure of your ground complete the order first. Do the best you know how. That is all you can do. When there are rumors answer them with facts quickly.

It won't be long until we will have a flood of orders which will be under voluntary allocations. They will be a headache not because they are big orders but because they often throw a monkey wrench into a delicate distribution system. This happened with steel after the war. It also happened back in the early 40's.

But what it does to the industrial machine can't be helped. Businessmen cannot afford to do anything but get out emergency, defense or war orders. They did before. They will do it now.

If some are not doing it, then other industrialists who are doing a job ought to be sharp tongued enough to those who seem to be shirking their duty. Everyone should not be pestered, accused or badgered because a very few are not toeing the mark.

A word of caution is the key word. A fast job on defense work is the goal. And a sharp comeback to gossip and unfounded rumor is a necessity.

Tom C. Campbell

Editor

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UNITED STATES STEEL

NEWSFRONT

NEWS, METHODS AND PRODUCT FORECAST

► A rifle bolt made of powdered metal is now in production. A sporting gun, with many of its parts made of powdered metal has also been designed but is not yet in production.

► Electroplating of aluminum 0.05 in. thick on tinmill blackplate is now possible. The process can be used with present electroplating facilities, merely by replacing the tin electrolyte with the aluminum solution. It takes 4 oz of aluminum to electroplate one base box of tinplate to get the same protection as 1¼ lb of tin used to cover a 1.25-lb base box of tinplate.

Several large can companies are now considering the process.

► From here on out, wherever the Government has a say in plant construction, location, etc., it will insist on dispersion of facilities whenever practical.

► The New Crucible-Remington titanium company will be producing 500-lb titanium ingots this fall. Remington's ingots now weigh about 125 lb. This will be boosted to 250 lb in about a month. Melting facilities will be expanded at Bridgeport, Conn.; new facilities will be built in the Pittsburgh district. Eventually, the furnace for making 500-lb ingots may be modified for 1000-lb ingots.

► By late last week almost all aircraft companies had doubled all orders on the books of stainless steel producers.

► Oldsmobile is using a carbon blasting device in which half a pound of rice under pressure is used in cleaning an engine. The rice chips off carbon deposits and is removed from the combustion chamber while still under pressure. The operation takes about 4 min for each chamber.

► Plans are being made to develop a deposit of fluorspar recently found in Cherokee County, Ala.

► A new electric eye, still in the experimental stage, is about the size of a .22 cal rifle cartridge. It is said to be smaller and sturdier than present photoelectric cells and may prove to be less expensive.

► The Army has already placed at least one order for tungsten carbide tipped armor piercing shells. The contract form is the same as those used during World War II, with the same escalator and renegotiation clauses.

► One reason that a third of our 3 million miles of public roads are unfit and unsafe for traffic is the fact that 35,000 governmental units are administering the road system.

► A new company (Begeca-Manganese) has been formed with $250,000 capitalization to mine and treat manganese ores in the Belgian Congo.

► Though a fair quantity of aspirin will be needed, voluntary allocations of steel will work very well with only about 10 pct of total steel being allocated voluntarily under government guidance. This looks like the maximum needed under present plans. World War II experience shows that complete control would be the worst possible way to distribute steel under present or even greatly expanded war plans.

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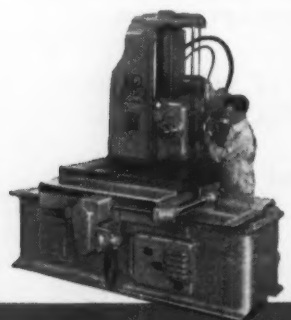

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Defense Needs to Come First

Voluntary Program Seen Best

The Iron Age SUMMARY

IRON AND STEEL INDUSTRY TRENDS

MILITARY steel requirements will not be as large as some people had expected. Under the regular budget for this year they will take only 1.6 pct of total steel production. The extra $10.5 billion voted for military purposes will add about 3 to 5 pct, making a total of 4.6 to 6.6 pct of total steel output needed for defense.

Foreign aid programs, including the Marshall Plan and military aid program, will require not more than 4 pct. This means that total steel needs for security at home and aid abroad will not exceed 10 pct of total steel production.

Voluntary Allocation Seen Best

Moreover, the huge battle and merchant fleets, which took large tonnages of steel during World War II, will be brought out of mothballs as needed. So will the defense plants. In case of emergency, the government still has first call on them—even if they have been sold and converted to peacetime operation. The important thing is that large tonnages of steel will not again be needed for ships and plants unless we face total war and mobilization far beyond that which is now planned.

To meet these requirements the steel industry has an annual capacity of more than 100 million tons, compared with 81.6 million tons in 1940. Significantly, the new capacity added in the past ten years alone can more than take care of all defense and foreign aid requirements. And the steel industry is still expanding its capacity at the rate of more than 2 million tons per year. It is better prepared to meet heavy requirements than ever before in its history.

Mandatory Controls Not Needed

Voluntary allocation of steel will assure quick shipment of all military needs and still leave enough steel to operate the civilian economy on a high level. They can also be placed in operation quickly, with a minimum of red tape.

Mandatory steel controls not only aren't needed at this time, but would cause a great deal of unnecessary confusion. They would delay the immediate war effort by a month or more. A priority doesn't get steel; it is only a "hunting license." We learned that the hard way during the last war, when valuable time was lost cutting through the duplication and red tape.

Freight cars could become a bottleneck. A serious car shortage, potentially the worst in history, is developing. The situation is likely to become worse before it gets better, and mandatory loading and shipping rules are a possibility if the picture doesn't improve. The Interstate Commerce Commission has ordered, effective Aug. 1, a demurrage penalty for cars held over Saturday and Sunday.

In addition to heavy shipments of iron and steel products by rail, the car shortage has been aggravated by heavy grain movements and large shipments of coal, sand, gravel, construction materials, steel scrap and other products. Due to the late start of the shipping season on the Great Lakes, Carnegie-Illinois Steel Corp. is trying to move 200 cars of ore per day all-rail in an effort to make up some of the 10 million tons that the industry would have moved boat-rail if ice conditions had not shortened the shipping season.

Precision Molding Process

A major development in the metalworking industry is revealed this week in an exclusive article by IRON AGE Detroit Editor Walter Patton. It discloses that the auto industry has put upwards of $2 million into development of a precision foundry molding process originally discovered some years ago in Germany. And this may be just the beginning. If it comes up to the expectations of automotive engineers it may be one of the most important contributions to break the machine tool bottleneck that would almost certainly come with total mobilization.

Steelmaking operations are scheduled at 101 pct of rated capacity, a rise of 1½ points from last week. Major scrap markets are strong, with prices edging higher in some centers.

(Nonferrous summary, p. 114)

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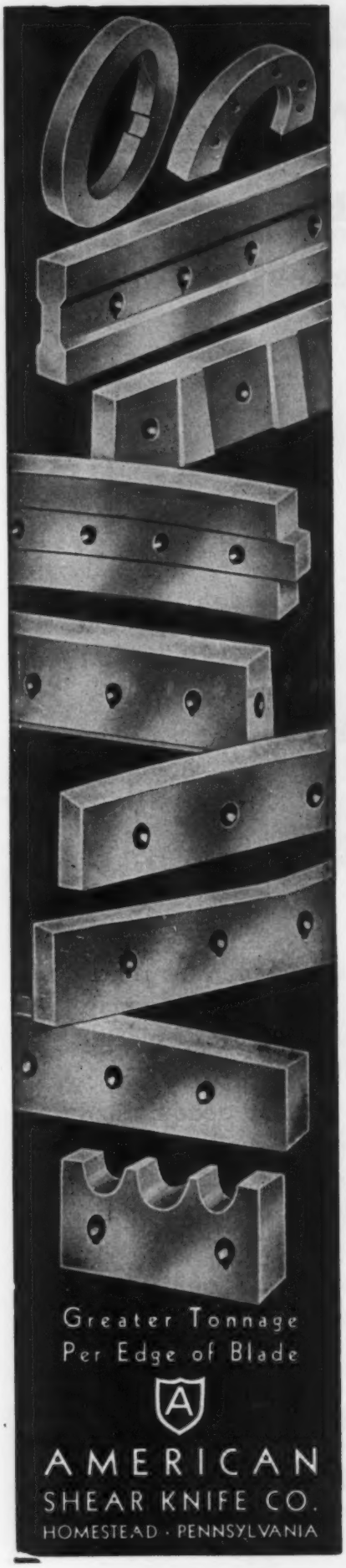


Dear Editor

Letters from Readers

Project Data Wanted

Sir:

Your being the highest authority in the metallurgical field, we are taking our problem to your good-selves with the thought that, perhaps, you would let us have your opinion or recommendations.

We intended casting an ingot (big-end down) from an ingot mold which has an addition of 27 in. in height to the ingot mold proper. The hot top which is of cast iron, bricked and, furthermore, has a sand facing which is rammed into place. The ingot hot top is 36 in. diam at the top by 37½ in. high tapered to 39 in. diam at bottom or junction of hot top to ingot body.

The foreseen weight of the ingot is 77,000 lb, hence the reason for an addition of 27 in., since we did not have enough tonnage without this addition. The above will give you an idea of ingot requirements.

However, instead of carrying on with this rigging, could we:

(1) Dig a pit in the ground of the required height i.e. approx 18 ft in this case, build up a brick wall against ground facing in the pit, and pour metal into same. When cooled, strip the ingot by lifting same. Naturally, the brick wall would disintegrate and a new one would have to be built for another heat. Or

(2) build up a steel shell of plate which would serve as an outer wall, brick lined as in (1).

In either case, there would be at the bottom steel plate of 4 to 5 in. thick on top of the brick-lined bottom. The main factor, in this case, is that we only require 3 ingots of approximate sectional area of 47 to 50 in. by 158 in. long without the hot top.

G. GUEVREMONT
Planning Manager

Sorel Industries Ltd.
Sorel, P/ Quebec, Canada

Although we wish to disqualify ourselves as being the highest authority in the metallurgical field, we shall attempt some general observations on your ingot mold problem. First, this is a big-end down ingot. It is customary in forging ingots of this size to pour them in big end-up molds. It might be wise, if it is possible, to turn the mold upside down and put the hot top on the other end. Ordinarily, the hot top should contain 20 pct of the weight of the entire ingot. Your hot top capacity is larger than usual, but it could be a little higher. The general rule is that the height of the hot top should be no more than two to three times the diameter of the ingot at the bottom of the hot top ingot junction. Your height is so much smaller than this maximum height that we wonder if the hot top will properly feed this size ingot during solidification.

In this type of ingot it is usual to have a 2-in. taper per ft of ingot mold height. Regarding the two alternative methods, a decision from the operating standpoint is primarily a matter of cost. In this country, at prevailing labor rates, it would be more expensive to dig a pit and construct the hot top out of brick or a steel shell.

Although there are only three ingots in the order we suspect that one rejected ingot would make the whole affair a losing proposition. We suggest, therefore, that you take your problem up with a competent metallurgical consultant experienced with ingot molds for heavy forgings.—Ed.

Cheaper Radiography

Sir:

Thank you for the information in regard to the procurement of radioactive Cobalt 60. The material appears to present by far the most economical approach to problems of radiography. Your plan to publish some details on the use of this material sounds very attractive to us. There is little likelihood that we shall miss that article since we consider ourselves to be among your most enthusiastic readers.

J. J. BUCZYNSKI
Metallurgical Dept.

Taylor Instrument Companies
Rochester, N. Y.

Higher Strength Alloy

Sir:

In your Newsfront of July 6, the last item refers to a zinc alloy said to have eight times the usual strength of any alloy now in use. We are interested in geting more information on this and are wondering if you can send it to us, or if you can refer us to the company that may be able to furnish us with the data on it.

M. G. L. HARRIS
Purchasing Agent

Detroit Brass & Malleable Works
Detroit

For further information, contact the Armour Research Foundation, 3350 S. Federal St., Chicago 16, Ill.—Ed.

Statistics Furnished

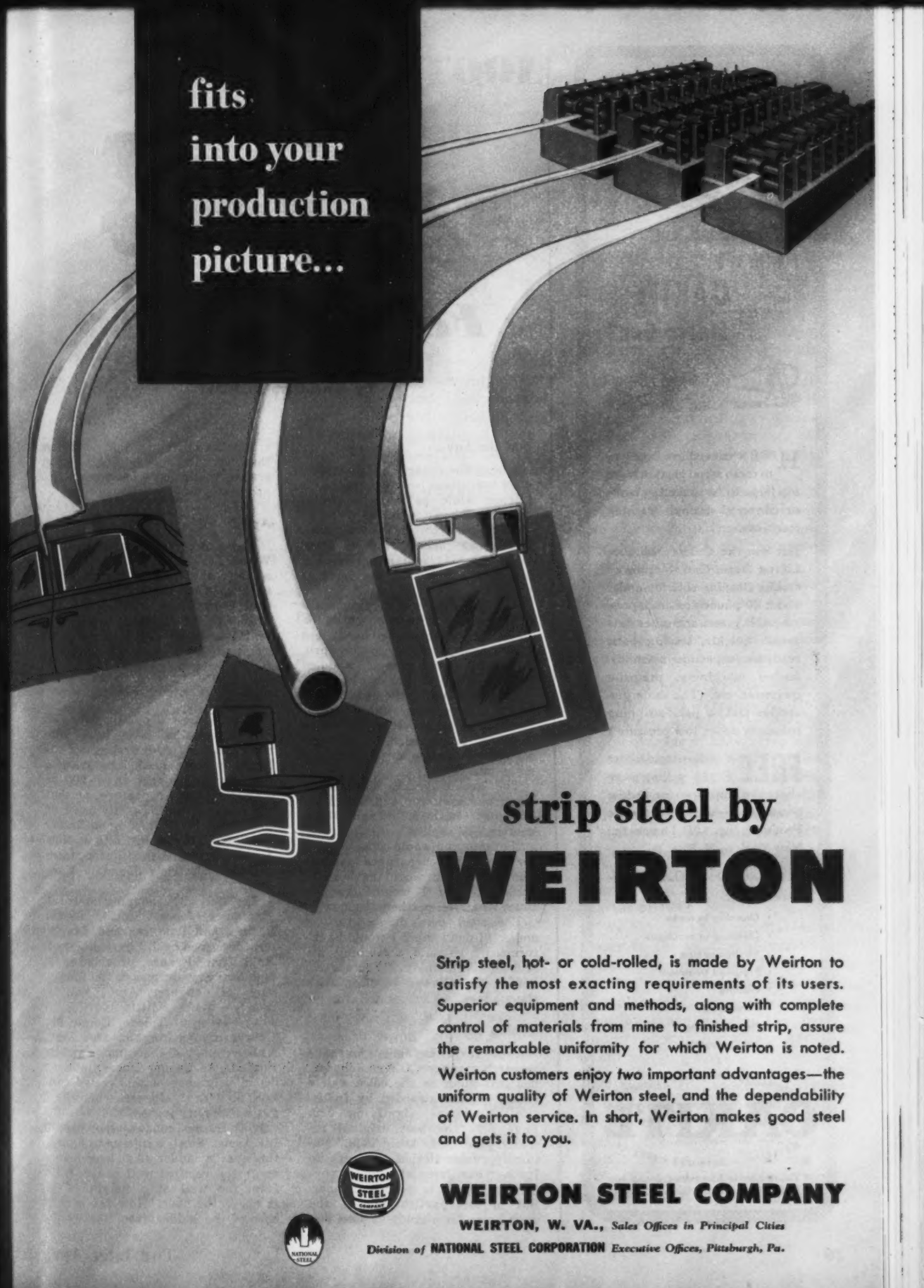
Sir:

We are presently working on a campaign, one advertisement of which will feature the steel industry. We would appreciate any interesting facts, newsworthy items, or figures showing the statistical growth of the steel industry which you might be able to send us. Four or five such items would be a great help.

W. E. SURGNER

Gear-Marston, Inc.
Philadelphia

A story and a few tables which might be of help to you have been forwarded. We are always glad to assist in such matters.—Ed.



strip steel by WEIRTON

Strip steel, hot- or cold-rolled, is made by Weirton to satisfy the most exacting requirements of its users. Superior equipment and methods, along with complete control of materials from mine to finished strip, assure the remarkable uniformity for which Weirton is noted.

Weirton customers enjoy *two* important advantages—the uniform quality of Weirton steel, and the dependability of Weirton service. In short, Weirton makes good steel and gets it to you.

WEIRTON STEEL COMPANY

WEIRTON, W. VA., *Sales Offices in Principal Cities*

Division of **NATIONAL STEEL CORPORATION** *Executive Offices, Pittsburgh, Pa.*

"The big parts are ready. We cleaned 'em with the OAKITE Steam Gun"

HERE'S an easy, low-cost way to clean metal parts that are too large to be soaked in tanks or conveyed through washing machines.

Just use the Oakite Solution-Lifting Steam Gun to apply an Oakite cleaning solution under about 40 pounds of steam pressure. Oil, grease and other dirts vanish quickly, leaving parts ready for inspection, assembly, further machining, pre-paint treatment, etc. (The same gun applies Oakite paint-stripping solutions under low pressure.)

FREE For illustrated folder F7338—telling more about the money-saving Oakite Steam Gun—write to Oakite Products, Inc., 30H Thames St., New York 6, N. Y.

ALSO *ask about Oakite procedures for:*

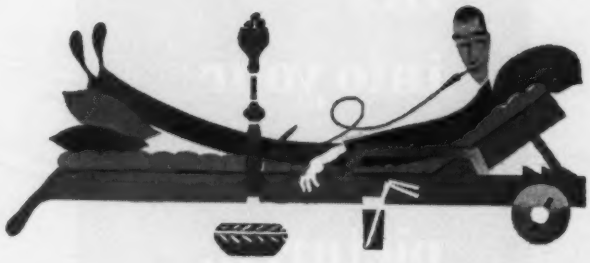
- Cleaning in tanks
- Cleaning in machines
- Electrocleaning
- Pre-paint treatment
- Pickling
- Burnishing
- Paint stripping
- Rust prevention

SPECIALIZED INDUSTRIAL CLEANING

OAKITE

MATERIALS • METHODS • SERVICE

Technical Service Representatives Located in Principal Cities of United States and Canada



Fatigue Cracks

By CHARLES T. POST

Not the Pay

One of the country's highest paid steel executives is suave and hard-hitting while he's at the office. When he's home in the suburbs, he likes nothing better than to dress like a rag picker, play with the wife and kids, and potter around his elaborate garden, the pride of his eye.

Last week he was digging bulbs near the street when he noticed a sleek limousine drive back and forth, finally pull up to the curb. A well-padded matron waddled over to where he was working.

"My good man," she condescended, "I wish to congratulate you on the care you have taken of these grounds. I only wish I could find someone as competent to care for my estate."

The steel magnate, delighted at being mistaken for a professional gardener, beamed. "Thank you, madam," he replied.

"Perhaps you would come to work for me," the encouraged matron went on. "You would have three assistants and I would pay you twice what you get here."

The steel man didn't crack a smile. "I don't think I would be interested," he said scratching his stubble appraisingly. "You see . . . here I am allowed to sleep with the madam."

Shining Light

Your favorite family journal's research manager, Oliver Johnson, has just hung on the office wall a bronze plaque awarded by *Industrial Marketing* signifying first prize for "the best original research published during 1949." Naturally, we're tickled to death to further our friendship with nonferrous metals in such a manner. But in this particular case, the award was for a study of steel distribution, and we can't help but think a gleaming stainless steel plaque would have been more appropriate.

Aptronym

Ray Kay reports that the Junior World Trade Association has elected as its treasurer Walter P. Boatwright, Jr., of the American President Lines. And, incidentally, the president of Minneapolis-Honeywell Regulator Co. — a business originally built on thermostats—is H. W. Sweatt.

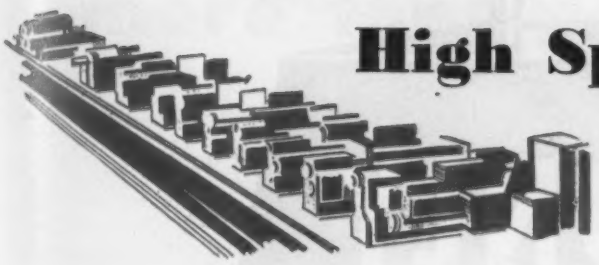
Puzzlers

After almost a month, only two correct answers have been submitted to the July 6 problem of the length of rope needed to graze a cow tied to a post in a 200 ft diameter circular pasture so that she can graze over exactly one-half the area. We heard immediately from Miss Eleanor S. Keith of New York and some time later from General Electric's Howard Fancher.

The July 20 shopping tour of Mesdames Jones, Smith, Black, Barnes, and Robinson and daughters, described by J. Charbonnier of Angouleme, France, provided only temporary mystery as to the family name of daughter, Ann. Ann is clearly a Jones, a little figuring by J. C. Severn of Toledo, Edgar M. Hoover of Washington, and John A. Davenport of Cincinnati quickly showed. As Reader Hoover put it, "Obviously none of this crowd can keep up with the Joneses when they get a shopping jag on."

H. C. Barnes, consulting engineer for Armco Steel, wants us to figure this one: A ladder 40 ft long leans against a vertical wall and is 6 ft from the wall at a height of 6 ft above the floor. How far is the base of the ladder from the wall?

MACHINE TOOL High Spots



Sales Inquiries and Production

By W. A. LLOYD

"Put Women to Work" — Machine tool builders moved closer to a wartime footing this week as new orders, chiefly the result of replacement buying, continued to pour into major segments of the industry.

In Cleveland, Tell Berna, general manager of National Machine Tool Builders' Assn., in a letter to NMTBA members, urged the employment of women where possible and the establishment of instruction courses for learners.

Reviewing factors of vital importance to the machine tool industry at this time, Mr. Berna pointed out:

To Stay in Shade State—Tentative production schedules (phantom orders)—"It is not expected that these will be activated in the near future. The increase in commercial demand serves the purpose of enabling the machine tool builder to increase his capacity about as fast as the commercial situation permits."

Truman's Powers—Priorities—"Under the Selective Service Act of 1948, the President has drastic authority in the interest of national security to specify what shall be made and what the delivery shall be, and if necessary to take immediate possession of any plant and operate it for the production of needed articles. However, there is at present no intention of setting up a priority system. What is required will probably be in the hands of the Department of Commerce. If that time comes, it is the plan of the National Security Resources Board, which serves in an advisory capacity, to recommend the reestablishment of General Preferences Order E-1-b, which worked very well in the last war."

War Work First—In the meantime, the Government Relations Committee of NMTBA has assured Government authorities that the machine tool industry will see that customers engaged in war work get the deliveries they need without the necessity for establishing a formal priority procedure.

Organization—A group of industry representatives has met under NSRB auspices several times since the war and is a skeleton organization of a tools division. It is ready to take over the duties of such a division under what will correspond to the War Production Board. However, there is no present intention of calling it to Washington.

Keep Them Working — Labor — Labor problems are to be in the hands of the Department of Labor.

Reserves—Mr. Berna urged that machine tool builders find out which of his men are in the reserves and the nature of the assignment to which each man may be called. "It is not intended that a man who is essential in the machine tool plant because of technical skill or executive ability will be called for a service which can be readily rendered by others."

Word of Caution — Munitions contracts—Mr. Berna urged caution in entering into contracts or sub-contracts for weapons or other items of munitions. If the outlook becomes more serious, these would receive high priority ratings and would seriously conflict with an expansion of machine tool output.

Bids Expected—In Detroit, the new Buick engine plant is rapidly taking shape, according to sources close to this development. Requests for quotations are expected momentarily.

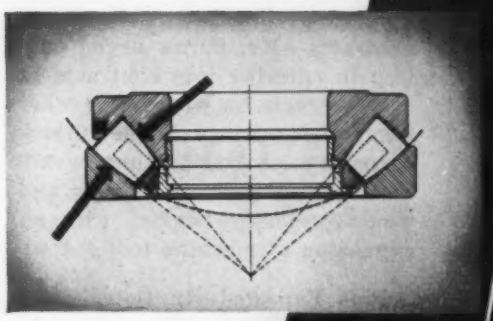
A survey of suppliers of special machine tools this week disclosed that 10 months is the shortest delivery time quoted, and the spread is constantly increasing.

Some small tool and die shops in the Detroit area have reported receiving telegrams from Washington asking them not to close their plants for vacations.

Lists Monarch Profits—In Sidney, Ohio, net earnings of Monarch Machine Tool Co. for the second quarter of 1950, after taxes and other charges, were $113,384 on net sales of $1,381,365, Jerome A. Raterman, president, reported. This compares with net earnings of $101,732 on net sales of $1,247,-038 in the first quarter of 1950 and net earnings of $161,000 on net sales of $2,113,220 for the second quarter of 1949.

"We have had an appreciable increase in the volume of business in recent months," Mr. Raterman stated, "with the result that our backlog as of today is three times what it was at the first of the year. Additional men have been added to our working force."

Shipments to France—In Ilion, N. Y., shipment of machinery from Plant 1 of Remington-Rand, Inc., here to the company's newly acquired plant in Lyon, France, will begin at once, H. T. Anderson, manager of the three Rand plants here disclosed.



ONLY SKF

ENGINEERS A SPHERICAL ROLLER THRUST BEARING WITH

1. Capacity exceeding 2,000,000 lbs.
2. Rolling alignment
3. Continuous operation at sustained high speeds

Here's the *one* spherical roller thrust bearing with undiminished capacity at sustained high speeds, even if there's misalignment between the shaft and housing bore.

SKF engineering makes it possible. Look at the drawing. Load components firmly contact the roller ends against the high guide flange, to assure positive guiding of the rollers without excessive pressure on their ends. Misalignment doesn't matter —the outer bearing race is a section of a sphere on which the inner race and roller assembly align freely.

What this amounts to is one more example of the advanced, pioneering kind of engineering that puts the right bearing in the right place—the SKF kind of leadership that has always *anticipated* the needs of American Industry. **SKF** INDUSTRIES, INC., PHILADELPHIA 32, PA., *Pioneers of the Deep Groove Ball Bearing, Spherical Roller Bearing, Self-Aligning Ball Bearing.* 7097

SKF

BALL AND ROLLER BEARINGS

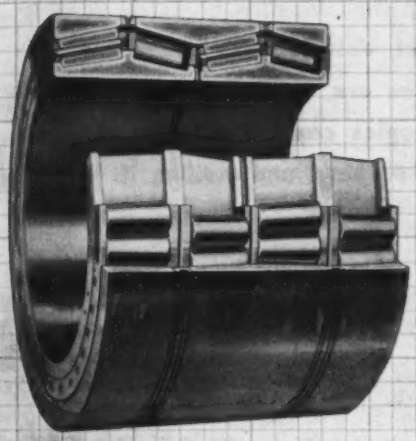
8 REASONS WHY SKF IS PREFERRED BY ALL INDUSTRY

Integrity — Craftsmanship — Metallurgy — Tolerance Control

Surface Finish — Product Uniformity — Engineering Service — Field Service

more tons per turn...

TORRINGTON ROLL NECK BEARINGS



It takes bearings with rugged construction and sound metallurgy to keep roughing stands operating continually. In the rougher and other stands in Carnegie-Illinois Steel Corporation's 80" hot strip mill at Gary Sheet and Tin Mill, Torrington Roll Neck Bearings provide these and other advantages.

Four rows of tapered rollers provide high radial and thrust capacity. The reduced cross-section of these bearings allows larger roll necks for maximum rigidity. Minimum friction allows rapid acceleration with improved quality and uniformity of gage of sheet.

These Torrington Roll Neck Bearing features add up to economical operation, greater production and lower maintenance. Specify Torrington Bearings for your mill stands and auxiliary equipment.

THE TORRINGTON COMPANY
South Bend 21, Ind. • Torrington, Conn.
District Offices and Distributors in Principal Cities
of United States and Canada

TORRINGTON *TAPERED ROLLER* BEARINGS

SPHERICAL ROLLER · TAPERED ROLLER · STRAIGHT ROLLER · NEEDLE · BALL · NEEDLE ROLLERS

FREE — USE POST CARD

PUBLICATIONS

New publications that describe money saving equipment and services are available free and without obligation. Copies can be obtained by filling in the attached card and mailing it.

Steel Stock List

The new 1950-51 stock list and reference book covers the complete listing of all carbon steel, stainless and alloy steel, and tubing stocks carried in USSSC inventories. An important feature of industrial interest are pages devoted to reinforcing bars and their fabrication, an operation performed at five of the company's plants. About 75 p. are devoted to machinery and industrial supplies of a wide variety. The book also includes technical tables, structural loads, fraction and decimal conversions and steel chemistries. *United States Steel Supply Co.*

For free copy insert No. 1 on postcard.

Cost Cutting Data

Cutting costs with close-tolerance tubing is the subject of a 16-p. booklet covering ferrous, nonferrous and bi-metal applications. The new brochure gives tolerance, finish and application data on compression-formed tubing, explaining how various mandrels are used to produce tapers and special internal shapes. Details of the process are given, along with information on machining of rings and cylindrical parts. *Tube Reducing Corp.*

For free copy insert No. 2 on postcard.

Air Cylinders Shown

Current data on the company's engineering developments on Logan stationary and rotating air cylinders and air-operated vises are presented in a new catalog. Dimensional drawings, complete specifications and other descriptive information present the design features that assure peak performance and long life of this equipment. *Logansport Machine Co., Inc.*

For free copy insert No. 3 on postcard.

Penetrant Inspection

Dy-Chek, the dye penetrant method of inspection for every kind of metal, is described in a new circular. This revolutionary chemical process is used for manufacturing inspection, receiving inspection and preventive maintenance. *Dy-Chek Co., Div. of Northrop Aircraft, Inc.*

For free copy insert No. 4 on postcard.

Efficient Hobber

Features and advantages of the Barber-Colman No. 6-10 hobbing machine are presented in a new 4-p. folder. This member of a well-known family of machines promises accurate, dependable performance on the smaller hobbing jobs. A dimensional drawing is shown, along with complete specifications. *Barber-Colman Co.*

For free copy insert No. 5 on postcard.

Forcing Presses

Several models of the Beatty Motor driven hydraulic forcing presses, for general use in machine, electric and railroad shops, are shown in a new 8-p. bulletin. Specifications for a variety of capacities and sizes are given. Information on this company's horizontal high speed hydraulic bulldozer is also contained in the booklet. *Beatty Machine & Mfg. Co.*

For free copy insert No. 6 on postcard.

Resistance Welding Alloys

Useful information regarding recommended applications of resistance welding electrode materials is contained in a new 12-p. catalog on Tuffaloy alloys. RWMA recommended electrode materials for spot welding and welding dissimilar metals are detailed along with complete price information on these alloys, welding tips and tip holders. *Welding Sales & Engineering Co.*

For free copy insert No. 7 on postcard.

Gear Data Catalog

The new edition, No. 55, of the complete Boston Gear Catalog contains over 380 p. of information on new stock gear items together with application, selection and ready reference data that has not appeared in previous editions. It also includes all of the product and engineering information in quick reference form that has made this catalog a handy part of the working kit of designers and users of power transmission equipment and

Turn to Page 106

Maintain Operating Accuracy

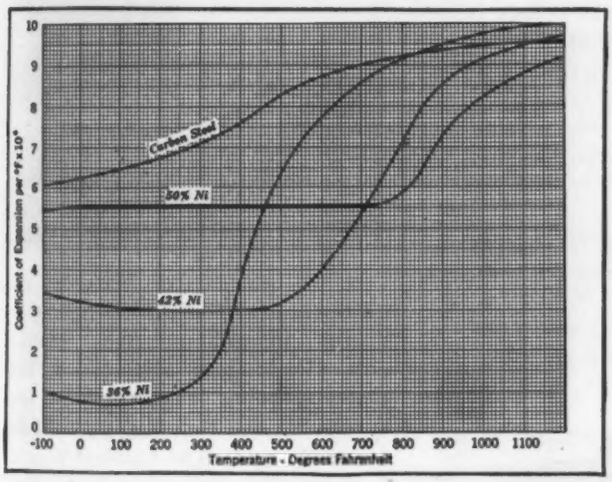
BY USING

Iron-Nickel Alloys

TO CONTROL THERMAL EXPANSION

Any desired coefficient of expansion, ranging from almost zero to a value greater than that of ordinary steel, may be obtained with the iron-nickel alloys. In addition, these alloys are strong, tough, ductile and possess a useful degree of corrosion resistance.

In wide use is a 36% nickel alloy... aptly named "Invar" because its dimensions remain almost *invariable* over the range of atmospheric temperature variations. However, as nickel content goes higher, expansion increases continuously. The chart, below, shows the thermal expansion characteristics of Invar and two other high nickel alloys, along with those of carbon steel for comparison.


Coefficient of Expansion per °F x 10⁶
Carbon Steel
50% Ni
42% Ni
36% Ni
-100 0 100 200 300 400 500 600 700 800 900 1000 1100
Temperature - Degrees Fahrenheit

FABRICATION

Like all austenitic alloys, those of the iron-nickel system respond well to plastic deformation, either hot or cold. They may be welded by any of the commonly used methods, and users report their machining characteristics are very similar to those of other high nickel alloys such as Monel® and Inconel®. A special, free-cutting grade is available to meet exacting machining requirements.

APPLICATIONS

Where dimensional changes with temperature must be minimized, or where such changes must approximate those of other materials of relatively low expansivity, iron-nickel alloys... sometimes modified by other alloying elements... are almost universally used.

For example... in thermostatic bimetal strip, Invar serves as the low expansion side for use up to moderately elevated temperatures. At higher temperatures, the 42% nickel alloy is commonly used. For the high expansion side, special alloys, containing 15-25% nickel, are used extensively because they develop nearly double the expansivity of iron. Iron-nickel alloys are also widely used in glass-to-metal seals, where expansivity of the glass must be closely matched. The 42% nickel alloy, sometimes with added chromium, is used with soft glasses. Hard glasses call for nickel alloys containing added cobalt.

Scores of other iron-nickel alloy applications include bases for giant telescopes, surveyors' tapes, radio condensers, parts for textile machinery and for numerous precision instruments and devices.

Industrial fields of usefulness for the iron-nickel alloys are far from exhausted. These unique materials can be of incalculable value in improving instrumentation and process control, and in the design of new devices. They are available in various forms including wire, rod, strip, sheet, bars and tubing. Send coupon today for additional information on the properties of iron-nickel alloys... they may be the means of improving your products, equipment, or process.

EMBLEM OF INCO SERVICE TRADE MARK

The International Nickel Company, Inc.
Dept. IA, 67 Wall St., New York 5, N.Y.

Please send me further information about Iron-Nickel Alloys.

*Name*_____ *Title*_____

*Company*_____

*Address*_____

*City*_____ *State*_____

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.

NEW PRODUCTION IDEAS

Continued

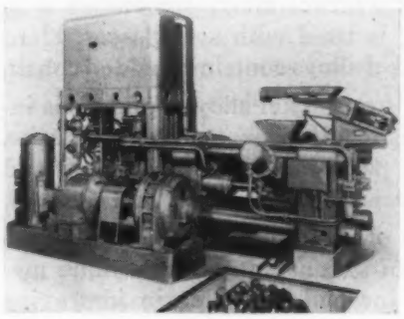
step-cut piston ring piston assemblies are available and interchangeable with Miller leakproof leather piston cup seal assembly recommended for use where no leakage can be tolerated. *Miller Motor Co.*

For more data insert No. 20 on postcard, p. 37.

Briquetting Presses

Scrap conversion capacities range from ¾ to 3½ tons per hr.

Milwaukee briquetting presses convert low-grade bulk metal turnings, borings, chips and shavings into dense cylindrical metal blocks that are suitable for charging directly into a foundry cupola as high-grade scrap. Designed to accommodate steel, cast iron, brass, magnesium, bronze, and aluminum



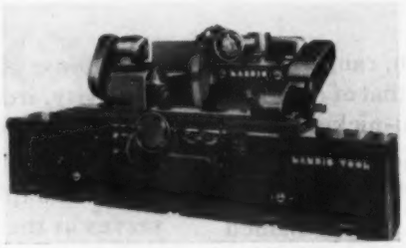
chips, shavings, or turnings, the presses feature compact design, simplified controls, and rapid and economical operation. All operations are automatically controlled, either hydraulically or electrically. A pressurized lubrication system serves all moving parts. Individual briquettes range in weight from 3 to 11 lb. Finished briquettes are clean, free of oil and other cutting lubricants. *Spo, Inc.*

For more data insert No. 21 on postcard, p. 37.

Cylindrical Grinder

Grinds medium weight workpieces to high degree of finish, accuracy.

A new line of 10 and 14-in. plain and semi-automatic grinding machines has among improvements a new heavy bed, new operating controls, new way lubrication methods and new telescoping covers for the carriage ways. Lengths between centers of 18, 36, 48, 72, 96 and 120 in. are available in both 10 and 14-in. swings. Grinding operations for which the machines



are suitable include straight cylindrical, taper, shoulder, and with extra equipment, profile and angular grinding. A 30-in. diam grinding wheel is standard and is driven from either a 10 or 15 hp motor. The headstock is powered by a 1 hp motor, with four work speeds from 54 to 150 rpm. Both the wheel drive and complete headstock drive are through V belts. Microsphere bearings support the grinding wheel spindle. *Landis Tool Co.*

For more data insert No. 22 on postcard, p. 37.

Coil-End Straightener

Simplifies straightening coil ends of any weight metal or temper.

The machine is versatile and is said to straighten coil ends in 1 to 2 min, preparatory to insertion in

a slitter. It can bend a 1-in. plate or a very light sheet, and any degree of bend desired can be obtained. The machine weighs 1000 lb. *Paxson Machine Co.*

For more data insert No. 23 on postcard, p. 37.

Ground Clamp

Weighs only 1½ lb, has jaw spread of 2½ in. and 300 amp capacity.

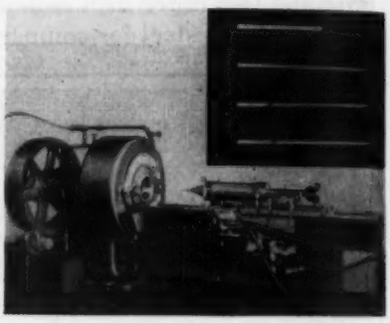
A new lightweight, low cost ground clamp provides a convenient, readily movable, yet solid ground connection for welding jobs where welding currents do not average over 300 amp. A heavy direct acting spring gives a positive, slip-proof connection with the work. Jaws are made of a special steel and copper alloy, Lincalloy, that is both highly conductive and resistant to wear. *Lincoln Electric Co.*

For more data insert No. 24 on postcard, p. 37.

Swaging Machine

Said to save 50 pct on material, and cuts production time.

The new swaging machine features special dies, and is said to successfully swage harder and tougher steels in length-to-diameter ratios far beyond previously



accepted standards. Material requirements are cut in half. In producing tapered spindles, blanks only 4½ in. long are needed, the material being lengthened by the swager as the tapering operations are performed. The finished length is 9 in. Three cycles are used to produce the spindle. A finish grinding operation follows swaging, but the swaged blank is reported to require less time and material removal by grinding than does an equivalent blank turned on a lathe. *Fenn Mfg. Co.*

For more data insert No. 25 on postcard, p. 37.

Nibbler Press

260 strokes per min speeds up hole, slot or notch punching.

Sheets, strips or plates up to ⅛ in. thick can be punched with any shape hole, slot or notch up to 12x4½ in. at a single setting in a matter of minutes. Duplication

Turn to Page 107

SNYDER *Delivers*

31 WORKING DAYS FROM FINAL RELEASE OF FIXTURE AND UNIT DETAILS UNTIL FIRST TEST PIECE WAS RUN

When changing specifications keep important units on the drafting boards and the projected delivery date races closer and closer—then's when shop capacity, equipment, and most of all, human know-how really count.

This big machine, scheduled within tight limits, went through on time despite changes.

This isn't exceptional in the Snyder plant—it's standard practice. And, although we don't invite rush work, we know that some of our friends think of us first when the heat's on.

Why don't you give us a call on those new machines you're planning. You'll like knowing that you'll get them on time.

The machine shown is one of a battery for processing a cast iron converter housing. It drills, chamfers, reams, counterbores or taps 51 various size holes at various angles in a 31½ second work cycle at six stations. It is fully automatic.

SNYDER TOOL & ENGINEERING COMPANY
3400 E. LAFAYETTE, DETROIT 7, MICHIGAN

Quarter Century of Successful Cooperation With Leading American Industries

Iron Age *Introduces*

HARRY O. JOHNSON, assigned to perform special duties in the office of the vice-president of operations, American Wire & Steel Co.

A. PAUL SELBY, who will become assistant to the vice-president of sales, U. S. Steel Corp. of Delaware.

JOHN ERNST, appointed to the post of general works manager, six tractor division plants, Allis-Chalmers Mfg. Co.

John E. Allen takes over as general superintendent of Central Furnaces and Docks and the Cleveland Coke Works of AMERICAN WIRE & STEEL CO., succeeding **Harry O. Johnson. George March** was advanced from general turn foreman to works superintendent of Central Furnaces and Docks.

Walter J. Simons will take over the newly created position of director of pensions and group insurance for the CHRYSLER CORP. Mr. Simons has been with Chrysler for the last 7 years doing special assignment work on the comptroller's staff.

Lester R. Sagar was appointed process manager of DEARBORN CHEMICAL CO. He will supervise production planning and the development of process equipment.

Irwin W. Peterson has been appointed a salesman in the Detroit area by the Grinding Machine Div. of NORTON CO., Worcester. **Everett M. Hicks** becomes manager for the same division, while **Walter G. Johnson** was named manager of research and engineering of the division, succeeding **Albert G. Belden** who retired recently as manager of research.

Joel B. Gibson has been made assistant to the president of SOUTHERN STATES IRON ROOFING CO., Savannah, Ga. He was previously chief engineer. Before joining Southern States, he was sales engineer with the TENNESSEE, COAL, IRON & RAILROAD CO.

C. Warner McVicar has been appointed assistant vice-president of purchasing activities of the various subsidiaries and divisions of the ROCKWELL MFG. CO., Pittsburgh.

Eugene N. Lohre, formerly assistant to the vice-president in charge of sales, has been named district manager of the Chicago territory sales office of JESSOP STEEL CO., Washington, Pa. Mr. Lohre joined Jessop Steel Co. in 1948. He had previously been associated with CARNEGIE-ILLINOIS STEEL CORP., Stainless Steel Div., Chicago.

William L. Wagner, Gaylord N. McSherry, Fred H. Klein and **Gordon S. Yost** have been appointed to new positions in the WILLYS-OVERLAND purchasing department.

Edward O. Jones has assumed managerial duties in the Chicago office of ROBBINS & MYERS, INC.

Hugo W. Liebert has retired from active service with ALLIS-CHALMERS MFG. CO. He had held the post of general works manager of six tractor division plants, the position which **John Ernst** now assumes.

William C. McCabe, former manager of ARMCO INTERNATIONAL CORP.'S Washington offices, has been returned to the company's headquarters in Middletown, Ohio, for special training in preparation for a foreign office assignment. **James Ferst** succeeds Mr. McCabe in Washington. **Thomas C. Proctor** has been transferred from AIC headquarters in Middletown to the position of salesman in the Washington office.

R. W. Tompkins has been appointed sales manager of the U. S. REDUCTION CO., Chicago. Mr. Tompkins formerly was in charge of the Chicago and midwestern operations of the U. S. PLYWOOD CORP.

Dr. H. Roswell Jones was named to the synthetic fuels and chemicals department of the Chemical Plants Div. of BLAW-KNOX CONSTRUCTION CO. Dr. Jones will be engaged mainly in the design of plants to produce finished refined products from Fischer-Tropach.

George H. McBride was named manager of WESTINGHOUSE ELECTRIC CORP.'S gearing division. He succeeds **L. R. Botsai,** now manager of the company's plant in Buffalo.

New members of the board of directors of the A. P. GREEN FIRE BRICK CO., Mexico, Mo., are: **George C. Willson, John R. Longmire** and **William H. Peterson.**

Richard A. Weppner has been appointed sales engineer for corrosion-resistant chemical construction materials in Delaware, Maryland, Virginia and parts of West Virginia and New Jersey for ATLAS MINERAL PRODUCTS CO., Mertztown, Pa. **Philip E. Berens** was handed the post of sales representative for corrosion-resistant materials in eastern Pennsylvania, western New York and parts of New Jersey, while **William A. Streaker** will serve as sales engineer for corrosion-proof materials in the lower peninsula of Michigan, eastern Indiana and Lucas County in Ohio.

Norman F. Smith has been appointed plant superintendent of the DEVILBISS CO., Toledo. For the past 3 years he has been chief process engineer with the PYLE NATIONAL CO., Chicago.

R. G. Tabors was appointed manager, Hydraulic Press & Power Tool Dept., BALDWIN LOCOMOTIVE WORKS.

Don V. Sawhill has been elected to the board of directors of the COPPERWELD STEEL CO., Glassport, Pa.

H. G. Blakeslee was named a member of the board of directors of the National Association of Food Equipment Manufacturers.

BOB KIRKMAN, named manager of Strand Garage Door Div., Detroit Steel Products Co.

Iron Age Salutes

HENRY SAHLIN

INVENTORS frequently miss the significance of their own inventions. And sometimes they aren't remembered for the things they think are best. But neither is true in the case of Henry Sahlin. He will be remembered as the man who developed the Iron Hand. He knows its significance; and, buried beneath his cloak of modesty, we suspect there must be pride of accomplishment.

Manual unloading of automotive stamping presses long bothered production executives. It was one of Detroit's few remaining slow-motion operations. Then Henry Sahlin made practical his unloader which was aptly called the Iron Hand.

No longer is it necessary for as many as three or four men to lift and transfer heavy, sharp-edged panels out of a press. The Iron Hand grips, lifts and removes a stamping an instant after the press ram begins its return cycle.

A diverse experience within the mass production stamping field backgrounded this venture. Harry, as he is popularly called, got his engineering education at Lowell Institute School of Massachusetts Institute of Technology. As works manager, chief die engineer, research engineer and master mechanic he was associated with General Electric Co., Briggs Manufacturing Co., Pines Winter Front Co., Edward G. Budd Co., Fisher Body Div. of General Motors and E. W. Bliss Co.

It was at Fisher Body Div., Grand Rapids, in 1940 that he developed his first Iron Hand. Despite its high engineering costs and massive size it did automatically remove large unwieldly parts faster, safer and cheaper. In 1945 he joined E. W. Bliss as master mechanic and later supervised a press development engineering program.

But he soon recognized the practicality of developing a standard type press unloader, and in 1947 he left Bliss to form the Sahlin Engineering Co. in Birmingham, Mich. Six months later several Sahlin Iron Hands were installed on presses in auto plants. Iron Hands can now be seen operating in almost every large auto stamping plant.

At 57 Harry Sahlin is a keen student as well as a recognized authority on metal stamping equipment and techniques, including presses, dies and material handling.

EUGENE F. WAMBOLD, who fills the newly created post of executive vice-president, Carboloy Co., Inc.

KENNETH R. BEARDSLEE, named president of Carboloy Co., Inc.

LEONARD J. MAGUIRE, new works manager, scale plant at St. Johnsbury, Vt., Fairbanks, Morse & Co.

Gordon H. Proffitt has been appointed sales representative in San Francisco for the NICKEL CADMIUM BATTERY CORP. Since 1940 he has been a manufacturer's representative for marine, railway and industrial equipment. **J. P. Williams, Jr.**, serves as his associate.

Jack Hause has been appointed manager of the transportation division of GENERAL ELECTRIC'S St. Louis office, headquarters of the apparatus department's newly-formed midstates district.

H. Braith Davis resigned as president of JOHN W. MASURY & SON, INC., and was elected chairman of the board. **Frank P. Connolly** was elected president.

E. C. Fones, Jr., was made representative in North and South Carolina for the STANDARD TRANSFORMER CO., Warren, Ohio.

O. E. Brown has been appointed research metallurgist at the West Coast research laboratory of ROBERTSHAW-FULTON CONTROLS CO.

C. J. Stakel, general manager of the CLEVELAND-CLIFFS IRON CO., is retiring from that position but will continue to serve in a consulting capacity. **W. A. Sterling** has been elected a vice-president of the company and will be located at the company's executive offices in Cleveland. Mr. Sterling has been serving as manager of the Mesaba Range properties. **C. W. Allen** has been appointed general manager of iron ore operations on both the Marquette and Mesaba Ranges under Mr. Sterling's direction. **Grover J. Holt** succeeds Mr. Sterling as manager of the Mesaba Range properties.

Willard R. Barrett formerly vice-president and general manager of the HOOSIER CARDINAL CORP., Evansville, Ind., has been named sales manager for the plastics division of the GENERAL ELECTRIC CO.

Dr. Max T. Goebel, assistant technical director of the DU PONT CO.'S Grasselli Chemicals Dept., has been appointed technical director, succeeding **Dr. John C. Woodhouse**, who has been appointed to a special assignment with the company.

Warren Lee Pierson, board chairman and chairman of the executive committee of TRANS WORLD AIRLINE, has been elected a director of PRESSED STEEL CAR CO.

Robert G. Kenly assumes the duties of assistant general sales manager of the NEW JERSEY ZINC SALES CO. **Frederick W. Jones** is new manager of the pigment division, while **Ernest H. Klein** serves as manager of the metal division.

M. E. Fields has been appointed director of personnel and public relations for the Cadillac Div. of GENERAL MOTORS. He succeeds **J. M. Roche**, recently elevated to sales manager.

Gordon F. Seely is the new field engineer of the CHICAGO PNEUMATIC HYDRAULIC TOOL DIV. At present, Mr. Seely is associated with the company's Detroit plant.

William O. Murphy was named to the post of sales manager of the materials handling equipment division, UNION STEEL PRODUCTS CO., Albion, Mich. He succeeds **Lawrence F. Emigholz**, who resigned to accept the position of assistant to the president of WILLIAMS FORM ENGINEERING, Grand Rapids.

E. R. Shepard has joined the HINCHMAN CORP. of Detroit as technical assistant. Mr. Shepard recently retired from the Corps of Engineers.

OBITUARIES

Nathan Lester, president of the Lester Engineering Co. and Lester-Phoenix, Inc., died recently in Cleveland.

Douglas C. Carruthers, general manager of Pittsburgh Plate Glass Co.'s paint plant at Springdale, Pa., died on July 14.

Peter D. Cameron, 79, believed to be the first man to operate a basic open hearth furnace, passed away recently. He was superintendent of the open hearth department of Homestead Steel Co. when he left the company in 1901.

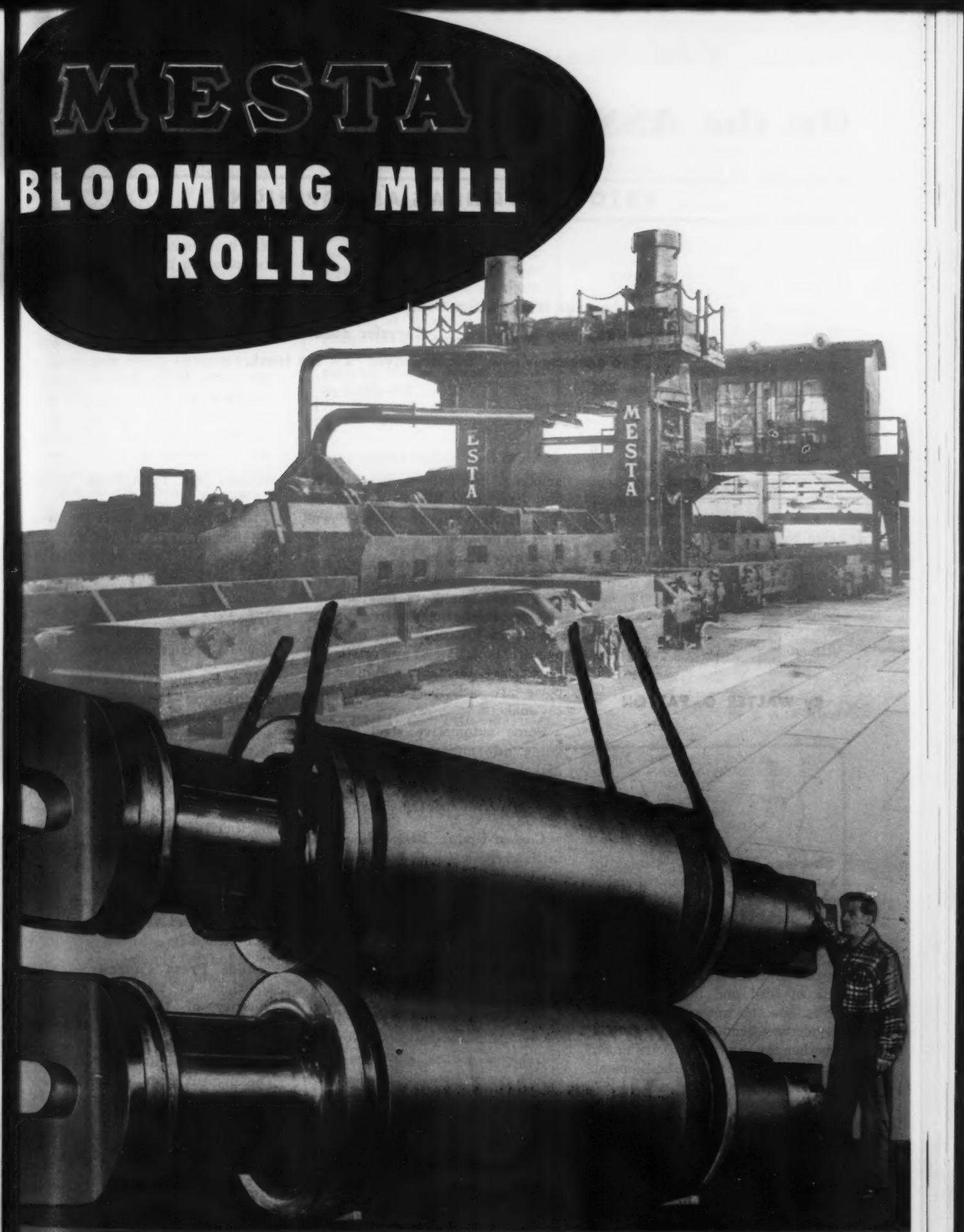
Louis T. Shorley, 60, president and treasurer of Freyn Engineering Co., Chicago, wholly-owned subsidiary of Koppers Co., Inc., passed away in Chicago on July 20.

Millard H. Ronzone, treasurer of Copperweld Steel Co., was killed on July 13 in an airplane accident near Pittsburgh.

Charles Kaufman, a director of Cleveland Cap Screw Co., passed away recently. He was the inventor of the so-called Kaufman process of manufacturing cap screws.

MESTA

BLOOMING MILL ROLLS



DESIGNERS AND BUILDERS OF COMPLETE STEEL PLANTS

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On the ASSEMBLY LINE

AUTOMOTIVE NEWS AND OPINIONS

Steel shortage threat hangs over industry . . . Auto dealers report big jump in orders . . . Chrysler doubles press plant . . . Reo announces new "Eager Beaver" 2½ ton truck.

By WALTER G. PATTON

Shortage Fears—The threat of a serious steel shortage in the automobile industry is growing each week. As steel buyers and auto executives see it, the industry is being harried by rising prices and scarce materials. Recently-increased costs of lead and nickle, for example, and the upward revision in alloy extra schedules is not expected to bother the car makers very much whose earnings are at the moment in the financial stratosphere.

Military Needs—However, the threat of steel allocations is a horse of another color. While allocations have not come out of Washington officially, the industry believes steel for the armed services will be required in steadily increasing amounts. At this moment, stainless steel looks like a particularly difficult item. There is also concern about obtaining adequate supplies of chromium.

Fears have been expressed here that some producers may not be able to finish their third quarter schedules. A reduction in Ford operations last week was attributed to a steel shortage. Similar reports are anticipated from other car makers.

Some automotive steel is now going into military orders. With nickel already rationed, the possibility of painted bumpers for 1951 cars has been mentioned.

Cost-of-Living Rise—Now that initial repercussions from the GM 5-year contract with UAW-CIO have died down, GM's wage policy is likely to come into the spotlight again. Last week it seemed certain that under the terms of the new contract GM would have to make a 3¢ hourly pay boost September 1 under its cost-of-living wage formula. Projections by the Bureau of Labor statistics indicate a wage boost of at least 3¢ will have to be made. The final computation is not expected before another 2 weeks.

White Collar Coverage—As expected, last week Chrysler extended its pension coverage to 16,000 supervisory and white collar workers not represented by the UAW-CIO.

Employees will start receiving benefits on Sept. 1. Benefits paid to employees will be similar to those paid under the union plan. Central Hanover Bank & Trust Co., New York City and National Bank of Detroit are co-trustees for the 90,000 Chrysler employees.

War Buying—With a war threat overhanging the economy, automobile dealers have reported their order volume has swelled from five to ten and even 15 times. Charges that dealers are packing their cars and resorting to some of the questionable tactics that brought so much criticism on the industry are widespread. The industry is already taking steps to warn its dealers against questionable trade practices. In the past, such warnings have had very little effect, it is admitted.

Adds Press Capacity—Latest additions to the growing press capacity of the automotive industry is the extension to Chrysler Corp.'s Nine Mile press plant which will double the floor space. The present plant comprises 415,000 sq ft of space and provides for exceptional flexibility for heavy press equipment.

The new addition is 320 x 1216 ft. More than 2000 tons of structural steel will be required for the new building. No completion date has been announced.

Come and Get It—Walter Reuther, president of UAW-CIO, has another plan. This time he wants to give $13 billion annually for the next hundred years to countries which will agree to spend the money for peaceful enterprise. Apparently, Reuther is convinced this country can buy itself peace in our time by following his surprising suggestion.

Reo Army Truck—Specifications for Reo's new Army Ordnance vehicle—a 2½-ton truck built for speed both on and off the highway—were disclosed last week. As built by Reo, the new vehicle can carry a 10,000 lb payload on the highway at 60 mph or take that load up a 60 pct grade.

The new truck will speed 30 mph on a constant grade of 3.8 pct and carry a 5000 lb payload cross-country. Due to standardization and interchangeability, the cost of spare parts is expected to be reduced one-third in comparison with trucks of similar capacity built during World War II.

Semi-Amphibious — The trucks are designed to cross a stream up to 7 ft deep without benefit of a bridge. They are completely waterproofed and the engine can be shut off and restarted below the surface. Two extension pipes are provided for underwater operation and are referred to as "snorkels" and "snorters." One is for air intake to the engine, and the other is for the exhaust.

The new Reo "Eager Beaver" is a 6 x 6 truck with 154 in. wheelbase. Approximately 5000 of these new vehicles were included in the new $31 million contract awarded to Reo recently.

Gas Economy Run—Despite frequent references to the economy features of the new high compression General Motors engines, most people were amazed recently when Cadillac engineers set up a test run for the benefit of the Detroit press section. During the test a 61 model carrying five adults averaged 18.9 miles to the gal. City speeds were held to 25 mph and driving on the Willow Run expressway the car was held at 50 mph. On the return trip driving on the expressway at 50 mph with no head wind, the car averaged 21.1 miles.

Auto Hinge Record—The production record being established by Soss Mfg. Co., Detroit manufacturer of automobile hinges, exemplifies the activity of some segments of the industry. With its seven production lines operating both day and afternoon shifts, the company established an all-time production record on July 18, according to Charles J. Soss, president. The previous record for production and shipment was established during June.

Earnings—Second quarter Nash earnings amounted to $10,052,117, 39 pct over the preceding 3 months, and sales for the quarter aggregated $132,829,364. Net earnings for 9 months were $21,482,-366 against $20,250,063 for the corresponding 1949 period.

Hudson sales during a single week — 4769 delivered to retail customers — also broke postwar sales records, and July sales were running 35 pct ahead of last July, according to N. K. Van Derzee, vice-president in charge of sales. Meanwhile, dealers' stocks were 41 pct lower in mid-July than at the same time last year.

Willys-Overland reported the highest shipments of Jeeps, trucks, and cars in the last 17 months.

Precision Castings

Too comprehensive for inclusion here is a special article that lifts the veil of secrecy surrounding the automobile industry's interest in the resin-sand or Croning process for high production of gray iron, steel and aluminum castings. The industry has probably put upwards of $2 million into development of it—and this may be only the beginning. The article, by Walter Patton, begins on p. 89.—Ed.

THE BULL OF THE WOODS — By J. R. Williams

OH, ALLEN, YOU'VE BEEN TO BROOKLYN AN' SAN FRANCISCO AN' SEEN OUR BIG CRANES INSTALLED THERE--AIN'T THEY AWE-INSPIRING?
OH, YES, I'M PROUD TO BE WORKIN' WHERE THEY WERE BUILT!
THEY'LL BRING A BABY IN HERE NEXT, TRYIN' TO GET TH' BULL AWAY ON A VACATION! HE'S NEVER BEEN FURTHER FROM HERE THAN TO TURKEY FOOT LAKE FISHIN'!
8-4
J.R. WILLIAMS
THE MEN OF THE WORLD
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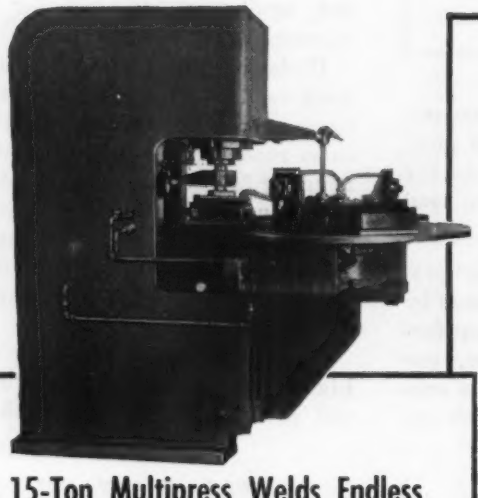
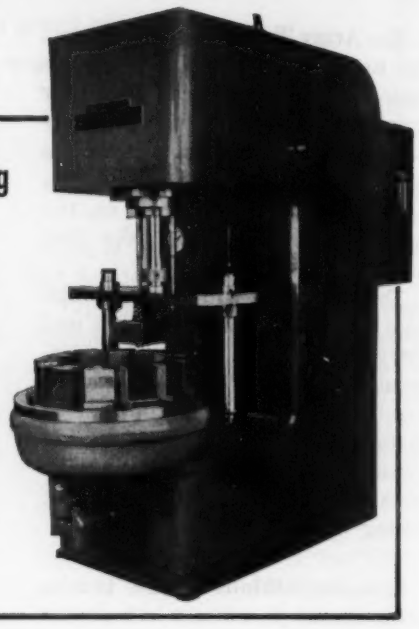


15-Ton Multipress Welds Endless Belts with Heat and Pressure

This standard 15-ton Multipress is equipped with a large Index Table which has a special dial to provide space for the large holding fixtures required to handle the parts being processed. It welds endless belts together with heat and pressure, allowing the joint to cure during a brief dwell period.



Fast, Accurate Broaching on 10-Ton Multipress

At the rate of 25 per minute, this 10-ton G-Frame Multipress broaches serrations simultaneously on two small shafts used in an auto part. Parts are manually loaded in fixtures that accommodate two shafts at each index-table station. Broached parts are automatically lifted by a cam within the table housing, for ejection. Widely adjustable ram speed, a Multipress feature, is ideal for broaching operations.

Speed Doubled on 25-Ton Riveting Job

This 25-ton Multipress, equipped with a standard Multipress Indexing Table, assembles screws in insulator bases at the rate of 1500 per hour. The operator merely loads fixtures; Multipress automatically indexes parts to the ram station, rivets them, loosens them from fixtures, and ejects them into a chute.

If any of your production jobs are handled with pressures from a few hundred pounds up through the 35-ton range, *find out now* how you can cut costs by switching to MULTIPRESS.

Hundreds of users in almost every type of industry have profited by doing so. They report gains that are often eye-opening—sometimes almost unbelievable.

Multipress gets these unusual results because its oil-smooth hydraulic action features advanced valving and controls that set a new pace in safe, fast, accuracy and versatility.

And if you want *positive proof* of what Multipress can do for you *before you buy*, your engineers can *see* Multipress in action on your own production jobs by simply supplying Denison's Testing Laboratory with the tooling you use.

Get the full story on Multipress. Sizes range upward from 1-ton bench models. Standard, job-speeding accessories available for many specialized needs. Write today!

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WEST COAST PROGRESS REPORT

Digest of Far West Industrial Activity—By R. T. REINHARDT

Manpower Tightening — Along with material shortages, war-stimulated industries such as aircraft, shipyards, military establishments and machine shops are faced with a potential dearth of skilled men.

Even those plants having a few more men than actually needed for current contracts are showing a tendency to hoard this manpower.

When Boeing Airplane Co., Seattle, advertised for 100 skilled machinists, it received 1000 applicants during the first 2 days, but on screening it was found that most were not machinists but non-skilled men anxious to get into a defense plant. Many of the skilled workmen in the Pacific Northwest had left for work in Alaska.

McChord Air Force Base at Tacoma, Wash., has recently sent out a call for 1000 civilian workers including everything from carpenters and refrigeration engineers to storekeepers.

Shipyards, Too — Speedup of work at the Bremerton Navy Yard at Seattle has raised the payroll above the 8800 ceiling previously in effect. Even the smaller yards such as the Puget Sound Bridge & Dredging Co. are upping their payroll from 100 to 300 men. Bethlehem Pacific at Seattle has added 250 men as the result of increasing production to about 80 pct of capacity.

In San Francisco Bay Area, Bethlehem Pacific Coast Steel Corp., Shipbuilding Div., has increased its payroll from practically nothing to more than 1000 in the last 2 weeks to handle reactivation work on tankers and transports. In Los Angeles, Bethlehem, Todd and Craig shipyards have all increased payrolls.

Although shortages of skilled workers have not as yet interfered with production, thoughtful industrialists are dusting off application blanks and studying personnel records against such a possibility.

More Furnaces On—Pressure for ingot tonnage has put two more of Bethlehem Pacific's furnaces in Seattle in operation which have been shut down since last winter, leaving only one furnace unlighted. This activity can't be attributed to the military situation since production is going into construction and tie-plate orders.

In Los Angeles, Bethlehem has again fired its two openhearth furnaces which were recently shut down when the company's new 75-ton electric furnace was put on the line.

Columbia Steel at Pittsburg, Calif., continues to operate its two marginal 25-ton furnaces in its former steel foundry and is shipping ingots to Geneva Steel Co. in Utah for rolling. Rumors persist that U. S. Steel Corp. is considering expanded ingot capacity at either or both Columbia and Geneva.

Manganese Stockpile Questioned —F. W. Libbey, director, Oregon State Dept. of Geology, takes issue with recently published statements that this country has enough manganese on hand to keep steel mills operating at full capacity for 2 years.

He contends that on the basis of information he has received, our country's strategic stockpile does not have more than 1 year's supply of manganese and that industry's stock is sufficient for only 6 to 7 months at capacity operation. He reports that in 1949 the domestic production was 125,800 tons and imports 1,540,410 tons of manganese ore which allowed only a moderate increase in industrial stocks. He states that at the end of 1949 industrial stocks amounted to a little more than 900,000 short tons and that consumption in 1949 was 1,330,428 short tons.

Urging that domestic production of manganese, as well as other strategic minerals, should be undertaken immediately, Mr. Libbey points out that known large tonnage sources would require not only large plants but extensive preliminary work and that it would take much more than 2 years to build up large manganese production in this country.

Rail Car Activity—Pacific Car & Foundry Co. at Renton, Wash., has just received an order for 1000 refrigerator cars from the Pacific Fruit Growers Express Co.

This new order will swell Pacific Car's payroll of 600 to approximately 1000 men who will turn out approximately 10 cars a day, depending on availability of materials. No deliveries are expected before the first of the year.

Hydrohoner* equipped with automatic MICRO-SIZE control Microhoning small-diameter holes in long parts.

Double-Spindle Hydrohoner shown Microhoning large-diameter, short bore. Electronic-MICRO-SIZE control is interlocked with automatic indexing table to give automatic operation.

AUTOMATIC GAGE RING MICROSIZE* —holes tolerance of .0003" or less, on diameter

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FROM MORE ACCURATE, MORE CONSISTENT CONTROL OF SIZE . . .

MICROSIZE—AUTOMATIC SIZE CONTROL adaptable to bores of any diameter or length. Electronic control automatically stops operation when bore is Microhoned to desired size. Tool feed-out is adjusted automatically.

Reduces:
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INSPECTION
SCRAP
SELECTIVE FITS
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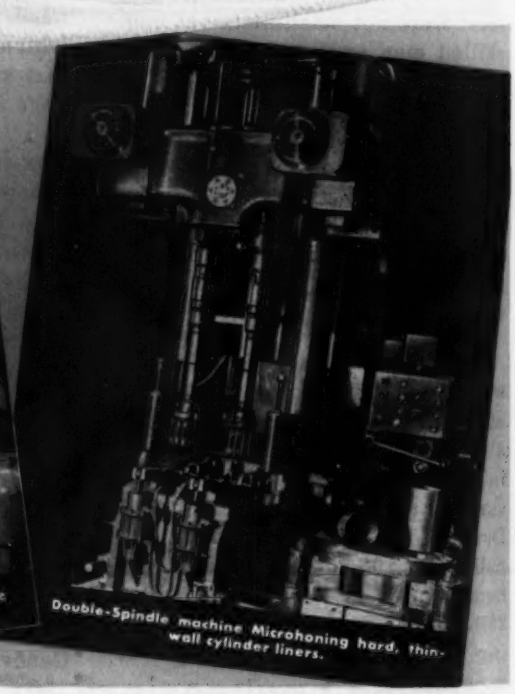
AUTOMATIC GAGE BAR MICROSIZE . . holes tolerance of .0007" or less on diameter.

MICROSIZE heads on V-type machine. All 8-cylinders in block are Microhoned simultaneously.



Double-Spindle machine Microhoning hard, thin-wall cylinder liners.

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THE FEDERAL VIEW

THIS WEEK IN WASHINGTON

By EUGENE J. HARDY

Military Steel Needs — Commerce Dept. experts working on machinery for steel allocations estimate that military demands for steel will not require more than 5 to 7 pct of total output. Under the regular budget for the current fiscal year military needs will be about 1.6 pct. The extra $10.5 billion for military purposes will add an estimated 3 to 5 pct. Marshall Plan needs and those of the Military Aid Program mean at most an additional 4 pct, making total steel needs for security purposes at most 11 pct of total output.

No Immediate Steel Expansion —Much talk about increasing steel capacity will continue to float around Washington, but immediate moves in this direction are not likely. This is confirmed by Commerce Secretary Charles Sawyer who told the Senate Banking Committee last week that in his opinion there is no "present necessity" to build additional steel plants. Commenting favorably on recent expansion by the steel industry, Mr. Sawyer also pointed out that the drain on steel in the present emergency would probably not be as great as during World War II.

President Truman also confirmed this view in his midyear economic message. While emphasizing the need for industrial expansion, the President stated that "it is easier to divert part of the steel which is now being produced to new purposes, than it would be to build plants to lift capacity."

How Much of What?—Concerning talk of industrial mobilization, the sad fact is that the government has only a general idea of what it owns in production equipment. As to the industrial reserve, it knows only that specified quantities have been earmarked and set aside for an emergency. How much and what could be put to work tomorrow, next week, or next month would be only guesswork.

Moreover, the government has never bothered to keep a central inventory of the machine tools and equipment it has rented out to industry. It is also known that about $40 million worth of tools and equipment has been rented out with the plants. But the equipment is lumped together under the heading of "related personalty." For instance, a cash register in the plant cafeteria is counted along with a drill press.

Housekeeping Notes—This was part of the surprise package handed to GSA Administrator Jess Larson when, as head of the agency, he became the government's "housekeeper." GSA hopes to find out how much and what it is responsible for by pulling out individual contracts and taking off inventories. But this will not begin until late September when the GSA expects to start setting up regional offices, at which time inventory taking will carry high priority on the must list.

Freight Absorption—First real news on the legality of freight absorption and delivered prices since President Truman's veto of S. 1008 is expected from the Federal Trade Commission within a matter of days. The watch-dog subcommittee of the Senate Commerce Committee established by Sen. Johnson, D., Colo. (THE IRON AGE, June 29, p. 62), to check on FTC policies affecting these matters, addressed 14 questions to the Commission as to present policy in the light of the presidential veto.

The questions are described as "humdingers," looking for a clear opinion as to the legality of industrial pricing practices. The subcommittee expects a reply from FTC shortly after Aug. 1 and will hold hearings within a matter of days after receipt of the reply.

Excess Profits Tax—While present deliberations over increased taxes do not give much prominence to an excess profits tax, the likelihood of such a levy before too long should not be overlooked. Tax experts in the Treasury Dept. and the Bureau of Internal Revenue would prefer straight boosts in income taxes to an excess profits levy.

They feel that the headaches encountered in administering an excess profits tax far outweigh the advantages. It will be remembered that during World War II Congress debated for 3 years over the merits of the earnings computation as opposed to the capitalization computation.

In Times of Stress—

America is Fortunate In its Warehouse Steel Service

In national emergencies America is fortunate in having a well developed steel warehouse industry with facilities strategically placed throughout the nation—taking care of the day to day requirements of steel users.

As you know, the steel distributor serves as a collective source making steel quickly available to all industry—and thus reducing the need for larger individual inventories. In this way the greatest turnover is developed and a maximum tonnage is always in use.

Naturally only a portion of our country's production requirements can be served from warehouse stocks but very often top production can be maintained only through quick shipments of steel that is missing. The essentiality of these warehouse services has been proven again and again—in every national emergency.

Here at Ryerson, the Korean situation has naturally increased the demand for steel. Requirements, growing directly and indirectly out of the new conflict, are adding to the tremendous demand that has existed—almost entirely without let-up—since the beginning of World War II.

In spite of this increased pressure, we are making every effort to serve steel users promptly. In times like these, shortages are inevitable. But we do have a large though uneven stock on hand in our nation-wide steel service plants. So for any steel you need, contact your nearby Ryerson Plant. We'll do our level best to fill your order.

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STEEL Behind The Iron Curtain

PART I

Russia, second to the United States in steel production broke all records last year, despite the lack of quality materials. Alloys and coking coal are still in short supply. Transportation and distribution of minerals and plants are not favorable. Significantly North Korea and Manchuria are Russia's two most important satellites—steelwise.

By DEMITRI B. SHIMKIN
Russian Research Center, Harvard University, Cambridge, Mass.

IN 1949, the steel ingot production of the Soviet Union was 21.2 million metric tons, second only to that of the United States. This industry has occupied a peculiarly important place within Russia's economy. The value of pig iron and ferroalloys produced by the USSR in 1937 equaled 37 pct of the value of the country's entire mineral output excluding precious metals. This compares to a ratio of 18 pct in the United States for the same year.

Between 1927/28 and 1938, Soviet output of pig iron and ferroalloys more than tripled, reaching about 14.8 million tons in the later year. However, few further gains were made up to the beginning of World War II, and the effects of the war were devastating. By 1942, 66 pct of the 1940 capacity had been lost, permitting an output of only 6.0 million tons. Through new construction in the Urals and Kuznetsk Basin, and rehabilitation in the Ukraine, the output of pig iron and blast furnace ferroalloys recovered to 9.2 million tons in 1945, 11.7 million tons in 1947 and to a new peak of 17.0 million tons in 1949.

Russian pig-iron technology has many peculiarities, largely arising from attempted maximum use of blast furnace capacity, the abundance of excellent refractories, and the composition of the iron ores and cokes used. The severe operating stresses under which the Soviets normally place their blast furnaces can be gaged by the average heat-times, 8.4 hr in the USSR compared to 9.4 hr in the United States and Germany for comparably-sized coke furnaces.

Such practice has led to short blast-furnace life, ranging from 14 months to 3, and rarely, 4 years. This practice has caused an enormous consumption of refractories, as is shown in Table I. Yet, despite intensive operation and the use of rich ores, 50 to 62 pct Fe, reinforced by scrap averaging 8 pct added iron content, the relation between production and capacity 88 pct, reached in 1937, was not impressive. One reason lay in the frequent use of raw ore, which led, in the case of the Krivoi Rog plant, to a loss of 21 pct of the iron content charged.

Also, the Soviets add manganese ore freely, both to increase manganese content in the pig iron and to remove excess sulfur if Donets coke is used. With Donets coke, manganese recoveries in the pig iron run only 37 to 50 pct. Ashy coke, rather than exceptionally high silica has also been responsible for high flux consumption, which averaged 18.9 pct of the charge in 8 plants. The consumption of coking coal has also been great,

averaging 182.7 pct of the pig iron produced in 1937, and 189.1 pct in 1940. The net result was a recovery of but 40.1 pct pig iron from the charge compared to 45.3 pct for the United States. Since the war, this pattern has continued. Postwar claims show an output at 99 pct of capacity in 1948, at 104 pct in 1949. This increase is the result of major improvements, particularly in iron-ore agglomeration.

Russian Steel On Firm Ground

In contrast to nonferrous metallurgy, Russia's iron and steel resource base is firm. This is especially true for refractories. Although geographically scattered, the main areas of steel manufacture exist only in the Ukraine and the Urals. Technically, the Soviets have had their greatest success in exceeding 100 pct capacity use of their blast and open-hearth furnaces within the past two years. They have also lessened great weaknesses in their supplies of alloying metals and in the quality and diversity of their ferrous products. However, lavish use of sub-standard products, such as high-ash coke and carbon tool steel, is still characteristic. Finally, labor productivity in the iron and steel industry has been relatively high. It ran 43 pct that of the United States in 1937, compared to 20 to 25 pct for most other Soviet industries.

Basic Resources Present 5 Problems

An assessment of the basic resources available to the Soviet iron and steel industry requires consideration of five problems. These include the quantitative reserves of iron-making minerals, qualities of ores, their geographical distribution, their actual pattern of economic development over the past two decades, and the resources and requirements of Soviet-controlled areas in Eastern Europe and the Far East.

Table I presents a conservative summary of Soviet reserves of the principal iron-making minerals: iron ore, coking coal; the refractories—andalusite, chromite, fire clay, graphite, magnesite and dolomite; fluorspar; and the alloying metals—cobalt, manganese, molybdenum, nickel, tungsten and vanadium. Except for molybdenum and tungsten, the reserves of all of these minerals are very large in relation to current Soviet consumption. These reserves exceed a century's supply at the 1937 rate. Russia's resource position becomes much less favorable under the present high rate of consumption. Soviet reserves of cobalt, molybdenum, nickel and tungsten could only meet demands equal to those of the U. S. in 1944 for less than a decade; chromite and fluorspar, for less than 40 years; and iron ore and vanadium for 60 to 80 years.

The summary of Soviet reserves is based largely upon official estimates for the period 1936 to 1938, corrected by exclusions of sub-marginal and hypothetical resources, such as the 150 billion-odd tons of ferrugineous quartzites in Central Russia and the Far East, and the probably-great but unstudied coal fields of Northern Siberia. Other corrections have been made for subsequent discoveries, as for tungsten and molybdenum.

In general, however, the information presented here almost certainly underestimates the *ultimate* mineral-producing potentialities of the USSR by a large margin, for the geological exploration of that vast nation is still most incomplete. Only European Russia, including the Urals between 50° and 60° N, plus isolated districts of proven economic importance, such as the Kuznetsk Basin, can be described as being reasonably well studied. Furthermore, the assay of secondary components in ores has proceeded slowly. As late as 1940, Soviet estimates of molybdenum reserves completely ignored the significant molybdenum content of their porphyry copper ores.

Four Types of Soviet Ore

The iron ores of the USSR may be grouped into four major divisions; limonites ($2Fe_2O_3 \cdot 3H_2O$), comprising some 40 pct of the reserves; magnetites (Fe_3O_4), represented at Magnitogorsk and at the unexploited deposits of Dashkesan, Yeno and Rudnogorsk, comprising some 30 pct of the reserves; hematite (Fe_2O_3), found significantly only at Krivoi Rog, but comprising about 25 pct of the reserves; and titanomagnetites, important mainly as sources of vanadium-and titanium-bearing ores.

The limonites can further be subdivided according to age. The iron and manganese concentrations vary inversely, and water, phosphorus and sulfur concentrations vary directly, with decreasing age, from Lower Paleozoic (Bakal, Komarovo-Zigazinsk) to Upper Pliocene (Kerch).

Bakal ores are regarded as the finest in the USSR. They combine good iron content, 51 to 61 pct Fe with high manganese, 1.0 to 1.5 pct, a high $CaO:SiO_2$ ratio, thus being largely self-fluxing, and with low sulfur and phosphorus contents. Their textures are generally firm. They are premium ores, used largely for alloy and controlled-quality steels.

The Krivoi Rog ores are characterized by very high iron, 55 to 63 pct Fe, and low phosphorus and sulfur content, although they contain little manganese, 0.06 to 0.02, and are often powdery. Magnitogorsk ores are also good, with 42 to 62

This survey sketches Russia's ore, pig iron and ferroalloy technology and the manufacture of iron and steel products in the USSR. It is based primarily upon materials contained in a book to be published soon; by Mr. Shimkin, Minerals: A Key to Soviet Power, Harvard University Press.

TABLE I

RUSSIA'S METALLURGICAL RESOURCES

In metric tons

Symbol	Mineral	Reserves[1]		Supply		Principal Deposits[2]
		Measured	Total	1937	Post War	
Fe	Iron ore	3.85 billion	8.28 billion (Fe content 3.6 billion)	27.7 million less 0.35 million exports	40 million (1950 Plan); 1949 output about 32 million	1. Krivoi Rog (25 pct)*, 2. Tula (1 pct)* 3. Yeno (8 pct), 4. Kerch (28 pct), 5. Khoper (7 pct), 6. Dashkesan (1 pct), 7. Khalilovo (4 pct)*, 8. Magnitogorsk (5 pct)*, 9. Komarovo-Zigazinsk (3 pct)*, 10. Tagil-Kushva (5 pct)*, 11. Bakal (2 pct)*, 12. Ayat (?), 13. Temir Tau (1 pct)*, 14. Abakan (1 pct)*, 15. Rudnogorsk (3 pct)
C	Coking coal	Over 2.5 billion	Over 100 billion	38.9 million (24.4 for coke)	Tight; imports from Poland. Planned output (1950) 57.7 million	Donets Basin (8 pct): 1. Makeyevka*, 2. Gorlovka*, 3. Grachi*, 4. Vorkuta (5 pct)*, 5. Kizel (.7 pct)*, 6. Karaganda (7 pct)*: Kuznetsk Basin (57 pct): 7. Kemerovo*, 8. Prokopyevsk*; 9. Minusinsk (3 pct), 10. Cheremkhovo (11 pct), 11. Bureya (4 pct)
A	Andalusite, Al_2SiO_5	1.7 million	68.6 million	1,100 of concentrate	Tight; rich ores (Semiz Bug) depleted	1. Keiv Group (5 pct); 2. Semiz Bug (94 pct)*
F/C	Fire clay	482 million	1,041 million	2,360,000 (1936)	Probably comparable	1. Chasov Yar (17 pct)*, 2. Borovichi (9 pct)*, 3. Latnya (12 pct)*, 4. Bogdanovich (13 pct)*, 5. Salair (1 pct?)*
Gpr	Graphite	35.1 million, ore (3 to 90 pct C), 1937; cut 50 pct, 1939	Over one billion ore	12,800 incl. 6400 amorphous	Output unknown; probably large; imports from North Korea	1. Petrovo (5 pct)*, 2. Staryi Krym (1 pct)*, 3. Kyshtym (?)*, 4. Kureika (24 pct)*, 5. Soyuznoye (59 pct)*, 6. Bira (1 pct)*, (pct of 1937 measured reserves)
Mg	Magnesite and dolomite	85.7 million (magnesite); 74 million (dolomite)	630 million (magnesite); domolite, large	646,000 magnesite less 3880 exports; over one million dolomite	Possibly higher; large magnesite resources in Manchuria	1. Nikitovka (89 pct)*; 2. Yama (11 pct)*, (pct of measured dolomite reserves); 3. Satka (98 pct)*, (pct of measured magnesite reserves)
F	Fluorspar	2.25 million (50 pct CaF_2)	13.6 million of ore	58,095 (1936)	Reduced output likely; imports from Germany, North Korea	1. Aurakhmat (11 pct)*, 2. Amderma (39 pct)*, 3. Solonechnoye (13 pct)*, 4. Kalangui (13 pct)*, (pct of 1937 measured reserves)
Cr	Chromite	.....	At least 30 million	225,000 incl. 13 to 17 pct met grade	Export surplus: 98,952 long tons to U. S. 1948; 60 pct of output met grade	1. Kempersai (50 pct +)*, 2. Sarany (40 pct +)*
Co	Cobalt	.....	Ca. 20,000 max. recoverable	Small imports only	110-115 (1947); plus small imports from Germany	1. Petsamo (15 pct)*, 2. Monchegorsk (10 pct)*, 3. Khalilovo (85 pct)*, 4. Noril'sk (10 pct), percentages approximate
Mn	Manganese	230 million	786 million	2,752,000, 45 pct Mn ore less 1,001,000 exports and 300,000 stocking	1.5 to 2.0 million (1949)	1. Nikopol' (68 pct)*, 2. Chiatura (28 pct)*
Mo	Molybdenum	.....	Ca. 30,000 max. incl. Cu by-product	Ca. 1450 Mo consumed; 200 max. output, rest imported	500-700 Mo (1947) plus 100-300 imports from Manchuria, Finland	1. Tyrny-auz (30 pct)*, 2. Kounrad (Cu by-product (50 pct?)*, 3. Vostochnyi Kounrad*
Ni	Nickel	.....	Over one million	9750 consumed; 2000 output, rest imports	12,000 (1947) less small exports to satellites	1. Petsamo (23 pct)*, 2. Monchegorsk (18 pct)*, 3. Khalilovo Group (42 pct)*, 4. Noril'sk (17 pct)*, percentages approximate
W	Tungsten	.....	Possibly 20,000 (60 pct WO_3 equivalent)	Ca. 1000 conc. plus 2215 conc. imports	Ca. 1000 conc. plus 4374 conc. imports from China, probably also North Korea (1948)	1. Tyrny-auz*, 2. Varzob*, 3. Akchatau*, 4. Dzhida*, 5. Iul'tin, Distribution of reserves by deposit not available
V	Vanadium	.....	122,000 (plus V content C. Asia carnotites)	Ca. 350 contained in nat.-alloyed pig iron plus ca. 150 ferrovanadium imports	Domestic ferrovanadium produced but naturally alloyed pig primary	1. Kusa (55 pct)*, 2. Pervoural'sk (45 pct)*, (Of V in titano-magnetites), 3. Fergana Group carnotites)*

Notes: [1] Reserves generally as of 1936-38. [2] Except where indicated percent of total reserves ascribed to a deposit follows; for deposit location see map.

pct Fe, but are low in manganese, 0.14 pct Mn, and have higher silica and sulfur contents than those of Krivoi Rog. The Orsk-Khalilovo limonites, contain but 35 to 46 pct Fe. This ore contains 0.4 to 3.95 pct Cr and 0.08 to 0.69 pct Ni.

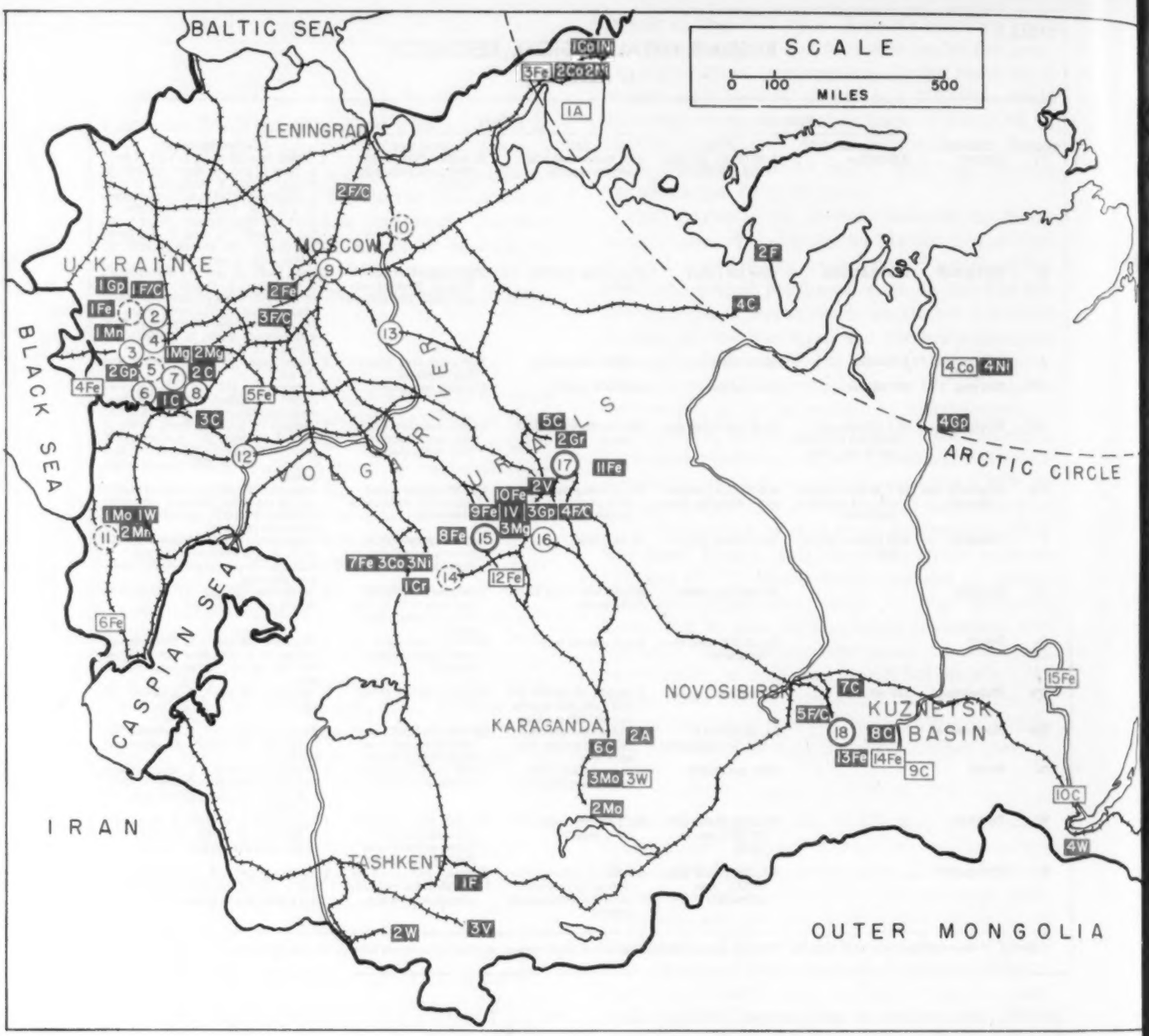
Other Soviet iron ores are fair to bad; those of Western Siberia, Temir Tau, Abakan, are plagued by zinc contamination and high silica content, while the Kerch ores—the only high-phosphorus ones in the USSR are very silaceous, watery and powdery, requiring extensive treatment before use.

The best coking coal in the USSR, low in sulfur, with acceptable ash content, comes from the Kuznetsk Basin. In contrast, coking coal from the Donets Basin of the Ukraine averages 2.8 to 3.2 pct S, removable only in part since 75 pct is chemically fixed. This fact has necessitated special measures in Soviet blast-furnace technology. Partial relief from this difficulty has been given pig iron production in Central Russia through wartime development of Vorkuta coking coal, with 0.7 to 0.9 pct S, but 8.3 to 14.6 pct ash.

In the Urals, Kiezl coking coal is miserable, with 24 pct ash and 2 to 3.5 pct S. Kraganda coking coal is also high in ash. Finally, the coking qualities of the Eastern Siberian bituminous coals have been little studied; Minusinsk appears promising, but the young, Jurassic, coals of Cheremkhovo and Bureya do not.

Ores of Manganese & Chromium Are Excellent

Soviet deposits of the major refractories—chromite, fire clay, magnesite and probably dolomite are excellent, as are the ores of manganese and the Kempirsai chromite deposit. These properties have been exploited in Soviet ferrous technology. The qualities of other iron-making mineral ores are variable. One fine nickel deposit, Petsamo, with 3.5 to 4.0 pct Ni, is under Soviet control; the others are fair to poor. The Transbaikal fluorspar ores are high in content and sulfide-free; the others range only from 33 to 54



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pct CaF_2, with barite and sphalerite contamination. Kureika has high-grade amorphous graphite, 84 to 91 pct C, but all other Soviet deposits, particularly of the more important flake graphite, are lean, with 3 to 17 pct C. Soviet andalusite and vanadium ores are fair, but the cobalt, molybdenum and tungsten ores are uniformly lean.

Distribution of Minerals Is Major Drawback

The geographical distribution of steelmaking mineral deposits in the USSR, as presently known, is generally unfavorable. Iron ore and coking coal reserves are widely separated. Only 5 pct of the ascertained iron reserves lie east of 63°E, while less than 9 pct of the coking coal resources are found west of this line although prospects for significant discoveries of iron ore exist southwest of Karaganda and in the eastern Transbaikal. Moreover, many deposits are very inaccessible. The fractions of Soviet reserves which lie north of the Arctic Circle are shown in Table II.

Ukraine and Urals Main Steel Areas

Nevertheless, mineral resources in two regions of the Soviet Union, the eastern Ukraine and the Urals, are juxtaposed favorably for steel production. In fact, 70 to 80 pct of all Soviet steel capacity today rests within these two areas. The eastern Ukraine holds, within a radius of 250 miles, the following proportions of Russia's reserves: iron ore, 60 pct, including 25 pct for Krivoi Rog; manganese, 66 pct; all the measured dolomite; fire clay, 17 pct; coking coal, of poor

Continued on Page 72

RUSSIA'S STEEL MILLS
AND ASSOCIATED MINERAL DEPOSITS
LEGEND
Steel mill, over 2 million m.t. ingot capacity.
Steel mill, 0.5-1.5 million m.t. ingot capacity.
Major steel mill under construction or reconstruction.
Fe Important mineral deposit in operation (Iron ore, Krivoi Rog). For Key see Table I.
OC Important mineral deposit not producing (Coking coal, Cheremkhovo). For Key see Table I.
Selected Railroads
KEY TO STEEL MILLS OVER 0.5 MILLION M.T. CAPACITY, 1949
1. Krivoi Rog[a] 2. Dneprodzerzhinsk
3. Zaporozhye 4. Dnepropetrovsk
5. Yenekiyevka[a] 6. Mariupol 7. Makeyevka
8. Voroshilovgrad 9. Moscow 10. Cherepovets[a]
11. Zestafoni( )[a] 12. Stalingrad 13. Gorkii
14. Orsk[a] 15. Magnitogorsk[b] 16. Chelyabinsk
17. Nizhne Tagil[b] 18. Stalinsk[b]
a. Construction or reconstruction unfinished
b. Over 2 million m.t. ingot capacity
5W
KOMSOMOLSK
IIC
3F
4F
6Gp
5Gp
MANCHURIA
SEA OF JAPAN

INACTIVE FACILITIES

IRON ORE			
3 Fe	Yeho	67°40′N	31°10′E
4 Fe	Kerch	45°15′N	36°20′E
5 Fe	Khoper	50°40′N	41°50′E
6 Fe	Dashkesan	40°25′N	46°10′E
9 Fe	Komarovo	53°50′N	57°25′E
10 Fe	Tagil	58°05′N	59°55′E
12 Fe	Ayat	53°0′N	62°15′E
14 Fe	Abakan	52°40′N	89°30′E
15 Fe	Rudnogorsk	57°30′N	107°30′E
COKING COAL			
9 C	Minusinsk	53°40′N	91°15′E
10 C	Cheremkhovo	53°0′N	103°0′E
11 C	Bureya	50°30′N	132°0′E
ANDALUSITE			
1 A	Keiv Group	67°30′N	37°0′E
COBALT			
4 Co	Noril'sk	69°20′N	88°08′E
MOLYBDENUM			
3 Mo	Vostochnyi	48°0′N	73°45′E
TUNGSTEN			
3 W	Akcha-Tau	48°0′N	73°45′E
5 W	Iul'tin	68°0′N	177°45′W

KEY TO MAP

Facilities in Operation

CODE	NAME	LOCATION	
IRON ORE			
1 Fe	Krivoi Rog	47°40′-48°25′N	33°25′E
2 Fe	Tula	54°0′N	37°45′E
7 Fe	Khalilovo	51°35′N	58°10′E
8 Fe	Magnitogorsk	53°25′N	59°10′E
	Kushva		
11 Fe	Bakal	54°50′N	58°50′E
13 Fe	Temir Tau	53°0′N	87°40′E
COKING COAL			
1 C	Makeyevka	47°57′N	37°46′E
2 C	Gorlovka	48°19′N	38°03′E
3 C	Grachi	48°10′N	41°0′E
4 C	Vorkuta	67°35′N	64°0′E
5 C	Kizel	59°0′N	57°31′E
6 C	Karaganda	49°40′N	73°0′E
7 C	Kemerovo	55°20′N	86°08′E
8 C	Prokopyevsk	53°50′N	86°50′E
ANDALUSITE			
2 A	Semiz Bug	50°30′N	74°30′E
CHROMIUM			
1 Cr	Kempirsai	50°50′N	58°20′E
2 Cr	Sarany	58°30′N	58°44′E
FIRE CLAY			
1 F/C	Chasov Yar	48°35′N	37°50′E
2 F/C	Borovichi	58°30′N	33°40′E
3 F/C	Latnya	52°40′N	39°0′E
4 F/C	Bogdanovich	56°50′N	62°10′E
5 F/C	Salair	54°14′N	85°48′E
GRAPHITE			
1 Gp	Petrovo	48°20′N	32°30′E
2 Gp	Staryi Krym	47°14′N	37°30′E
3 Gp	Kyshtym	55°40′N	60°30′E
4 Gp	Kureika	67°20′N	89°27′E
5 Gp	Soyuznoye	48°40′N	131°0′E
6 Gp	Bira	49°0′N	132°28′E
MAGNESITE AND DOLOMITE			
1 Mg	Nikitovka	48°24′N	38°03′E
2 Mg	Yama	48°52′N	38°06′E
3 Mg	Satka	55°0′N	59°0′E
FLUORSPAR			
1 F	Aurakhmat	42°10′N	69°55′E
2 F	Amderma	69°45′N	61°45′E
3 F	Solonechnoye	52°0′N	117°30′E
4 F	Kalangui	50°48′N	116°40′E
COBALT			
1 Co	Petsamo	69°25′N	30°15′E
2 Co	Monchegorsk	67°55′N	32°58′E
3 Co	Khalilovo	51°25′N	58°10′E
MANGANESE			
1 Mn	Nikopol'	47°35′N	34°35′E
2 Mn	Chiatura	42°19′N	43°21′E
MOLYBDENUM			
1 Mo	Tyrny-Auz	42°25′N	42°55′E
2 Mo	Kounrad	47°0′N	75°05′E
	Kounrad		
NICKEL			
1 Ni	Petsamo	69°25′N	30°15′E
2 Ni	Monchegorsk	67°55′N	38°58′E
3 Ni	Khalilovo	51°25′N	58°10′E
4 Ni	Noril'sk	69°20′N	88°08′E
TUNGSTEN			
1 W	Tyrny-Auz	43°25′N	42°55′E
2 W	Varzob	39°10′N	68°35′E
4 W	Dzhida	50°15′N	103°30′E
VANADIUM			
1 V	Kusa	55°15′N	59°48′E
2 V	Pervoural'sk	56°54′N	59°58′E
3 V	Fergana Group	41°0′N	71°30′E

quality, 8 pct; and graphite, 6 pct, but entirely flake. Furthermore, the mills of this region are central to domestic markets, since even today 80 pct of the Soviet population resides south and west of the Leningrad-Volga River-Caspian Sea line. Rail transportation, electric power and seaport facilities of this region, excellent before World War II, have been restored.

TABLE II

FROZEN ASSETS

Soviet Minerals which Lie North of Artic Circle

Mineral	Percent of Total Reserves
Nickel	58
Fluorspar	39
Cobalt	35
Graphite	24
Iron Ore	8
Coking Coal	5
Andalusite—Al_2SiO_5	5
Tungsten	Considerable (figures not available)

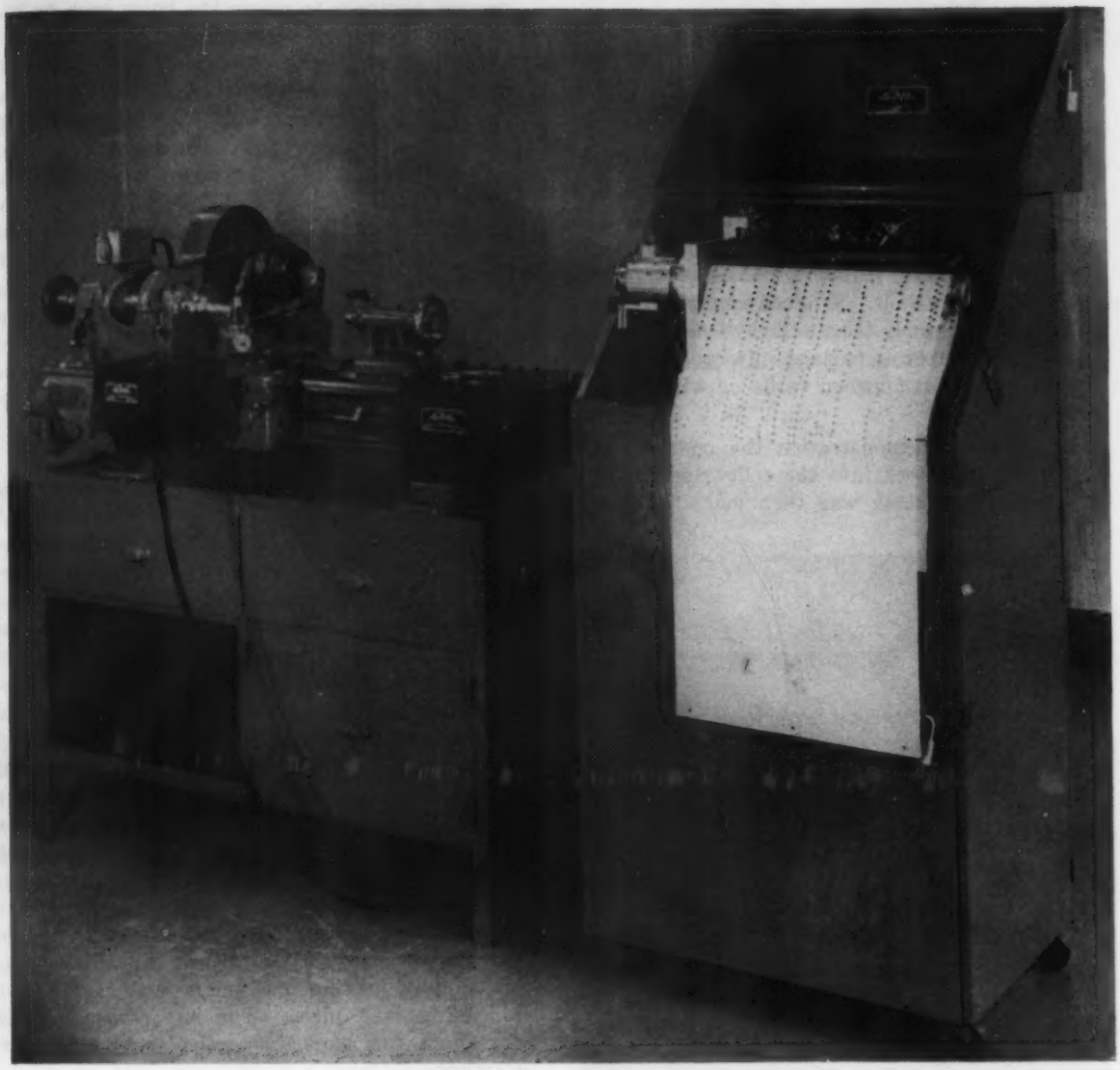
The Urals boast 19 pct of Soviet iron reserves, excluding large but unstated reserves at newly discovered Ayat. All Soviet chromite, all measured reserves of magnesite, most Soviet vanadium, two-thirds of the cobalt, over 40 pct of the nickel, 13 pct of the fire clay and fair graphite resources are found here. But coking coal and manganese supplies are poor and meager. The distant Kuznetsk Basin and Karaganda, supplemented by local Kizel, supply coking coal. Charcoal from Urals softwoods is the fuel for high-grade pig iron. The equally distant Ukraine and Transcaucasus furnish manganese, though in dire emergencies, as in World War II, manganese is stockpiled and small deposits in the Urals and Kazakhstan are used. Markets for Urals iron and steel—the region itself, the Volga area, and Central Asia—are smaller, and transportation is poorer, than for the eastern Ukraine. But the Urals gained extraordinary strategic importance and capitalized during World War II, through their remoteness from possible hostile lands.

The steel mills of Central Russia and the Volga: those of the Moscow district, formerly Leningrad, plus Gorkii, Stalingrad and others—serve the important machine-building industries located in the cities named. Yet these mills, except for local scrap, fire clay and half the iron ore consumed, depend on minerals from other regions, especially the Ukraine and, since the war, Vorkuta.

A new mill is being constructed at Cherepovets, on the northwest fringe of this area. It has been designed to use low-grade iron ore from Yeno and coking coal from Vorkuta, both north of the Arctic Circle, as well as local refractories and scrap from Leningrad and Moscow. The economies of this plant appear doubtful even to its Soviet planners. In contrast, the mill building in the Transcaucasus, probably at Zestafoni, fills a need felt for over 20 years. The vital petroleum industry of this area has long been starved for steel. Great reserves of manganese, substantial ones of iron ore, and some of molybdenum and tungsten occur nearby. The paucity of local coking coal presents a serious handicap, but this deficiency can be lessened through utilization of the important Transcaucasian hydro-electric power facilities.

MANCHURIA AND NORTH KOREA NEEDED BY RUSSIA

Part II of this article next week will cite the basic differences between Russia's Eastern Europe and Far East steel potentials. Eastern Europe steelmaking is a drain on Russia's iron ore resources. Manchuria and North Korea immensely strengthen Russia's position in Asia since they form the only promising base for large-scale steel production east of the Ural Mountains.



"BRAIN BLOCKS" in the form of electronic controls hooked up to an ordinary lathe will produce complete automaticity of any machining cycle. The machine need only be loaded and unloaded; electronic control does the rest.

ELECTRONIC ROBOT

Boosts Lathe Output 700 Pct

Automatic electronic control unit opens way for unskilled operators to increase machine tool output tremendously. Unit designed for manually operated machines on job orders or short runs permits exact repetition to close tolerances. Set up of control is relatively easy and fast.

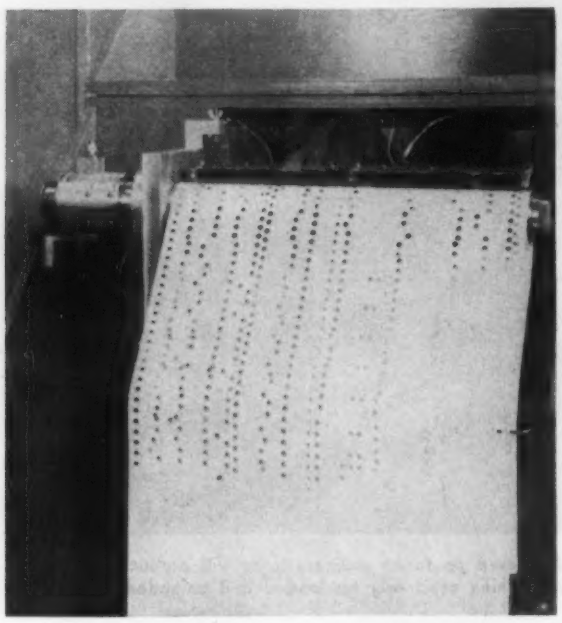
FURTHER details of an electronic robot to increase output of manually operated machine tools by as much as 700 pct were given to the technical press in a recent demonstration by Arma Corp. at Bush Terminal, Brooklyn. Its purpose is to increase production of manually operated machine tools on relatively short runs and reduce the skill required to operate them.

The demonstration unit consists of a 10-year old South Bend lathe with servo-motor devices driving the lead screw and the cross feed. These motors are electrically connected to the control box, which is primarily a hookup of electrical amplifiers. Impulses to operate these electronic

devices come through electrical contacts which are made or broken by a punched hole pattern on a paper roll.

Arma officials explained that the lathe was merely one example—that the control can be applied to jig borers, grinders and other types of manual machine tools. It is not competitive with automatics. Nor is the method of control—the "piano roll" paper important. It could be done equally well with punched cards or with a wire recorder.

In the press demonstration the operator put a piece of bar stock into the collet and pressed a button. The stock was then machined automatically with several stepped-down diameters and a chamfered end. Machine operations included rapid traverse and two to three roughing cuts on each diameter, followed by finishing cuts. After the chamfering operation the cross feed was withdrawn.



HOLES PUNCHED in this paper actuate each separate sequence of operation. One horizontal line of holes represents one complete motion on the machine. The degree of each motion is automatically controlled thru the "Brain Blocks" of the mechanism.

Before this, of course, the "piano roll" had to be punched. Arma engineers spent about 15 min punching the holes for the operation shown. To the obvious question, "What if the paper shrinks or stretches?" the answer was, "It doesn't matter." Precision control, down to a ten thousandth, comes from the amplifiers and timers in the control cabinet—not from exact spacing of the punched holes. Company engineers said it would be relatively easy to train a process engineer to punch the holes once he had laid out the usual sequence of operations.

While the lathe itself might not be accurate to a ten thousandth—this one had been used hard for a long time and was not rebuilt—it does repeat accurately. Therefore once the tool is zeroed—usually by centering—it will continue to hold close tolerances. The only important variation would come in tool wear after a long run. This wear could be easily compensated for.

Summarizing the advantages claimed for the unit, C. T. Foss, chief engineer, pointed out that higher work output came from (1) higher speeds; (2) no interruptions for "miking" and blueprint references; and (3) far fewer rejects.

"Master" Can Be Kept for Reuse

Cost cutting was promised for the shop using lathes on job work and small lots. The "master," whether it be paper, cardboard or wire, can be filed and used again when the job has to be repeated with no expense for setup time. One master paper would be suffice for each part as long as the repeat job was for a part made from a metal of similar machining characteristics. However the "piano player" paper guide punched up to machine a part from cast iron could not be used if the part were to be machined from stainless steel or some other dissimilar metal. A new paper master would have to be made which would take into consideration the different feeds and speeds for optimum machining of the other metals.

Once set up, an unskilled operator could handle several machines. His or her job would consist only of loading, pushing a button and later unloading each piece. The importance of this for short run work is particularly obvious in wartime.

The company calls the electronic control units "Brain Blocks." These standard units have changed the whole conception of electric analogue computers from a specially designed and calibrated instrument to one of taking mathematical signs ("Brain Blocks") out of a stock bin and assembling them quickly for any industrial operation that can be expressed as a formula.

The Arma Corp., a subsidiary of American Bosch Corp., does not build lathes. Its principal products are electrical computers, gun director parts and remote control systems. For almost 32 years it has had virtually no customer but the U. S. military establishment. It is now manufacturing several machine tool control units for its own shops.

Arma officials denied previous reports that the company might choose one manufacturer of lathes and work exclusively with him. They said it was more likely that the company would make the control systems and sell them directly or rent to users. They declined to estimate the selling price of a unit similar to that on demonstration, beyond saying that it would easily pay for itself in a year.

DUCTILE IRON
FOR HEAVY MACHINERY

Ductile iron is being used for machinery castings weighing up to 30 tons. Composition and heat treatment are the keys to the broad range of properties obtainable. Oscillograph recordings of special vibration dampening tests illustrate how this versatile material fills the gap between cast iron and cast steel. Studies show that patterns built for cast iron can be used.

By C. D. GALLOWAY, III
Foundry Superintendent,
Chambersburg Engineering Co.,
Chambersburg, Pa.

AFTER the first flurry of excitement over the announcement of ductile iron by International Nickel Co., Inc., industry realized that a great deal of work lay ahead before production problems and fields of application would be thoroughly understood. A group of leading foundries immediately went to work to solve these problems, and the commercial production of the material quickly became an established fact. The properties and fields of application are still undergoing study, but ductile iron has already been found to have many uses.

Early last year, Chambersburg Engineering Co. began experimenting with ductile iron in the heavy casting field. Studies were first directed toward the successful treatment of large quantities of metal and the correlation of test bar properties from metal sections ranging in thickness from 1 to 12 in.

The initial tests substantiated confidence in the material and were promptly followed by further experiments to determine special properties and the production of a wide variety of castings which are now in service. The castings illustrated in Figs. 1 and 2 represent typical parts which have been made. No complete service data is yet available due to the long expected service life of components, but information to date is very favorable.

To correctly evaluate the properties of ductile

FIG. 1—Forging hammer anvil weighing 60,000 lb, cast of Ductile Cecolloy.

FIG. 2—Varied applications for ductile iron include such parts as this 9000-lb forging hammer frame.

iron, it is necessary to realize that the material may develop many combinations of properties, which may be tailored to suit particular applications. Although called ductile iron, certain compositions have no ductility at all. Composition and heat treatment are the keys to its properties. For certain special applications, heat treatment must be specified for maximum ductility.

In order to obtain the desired properties without heat treatment, melting control is of first importance. The metallurgical problem reduces itself to one of adjusting chemical composition of the base metal and the magnesium treatment to obtain the desired properties in the particular casting being poured. Manganese, phosphorus and silicon must be carefully balanced, as those are the principal elements that influence the character of the matrix.

Any of the common alloys, such as nickel, chromium and molybdenum, will influence the metal structure, and cooling rate or metal section also has an effect. The effects of these elements on normal cast iron are well known and need not be restated in detail. However, it is important to note that ductile iron is essentially a sulfur free material and, therefore, no manganese is required to neutralize the sulfur. Because of this, virtually all manganese acts as a hardener.

Basically, ductile iron is a high silicon steel containing free graphite in spheroidal form. The matrix may consist of silico-ferrite, pearlite. cementite, and phosphide in direct relation to composition, cooling rate, and heat treatment. The graphite in spheroidal form has very little effect on strength and, therefore, may be varied over a considerable range. The effect of chemical composition on matrix structure is illustrated in Fig. 3, showing two ductile irons of widely different properties and compositions. Specimens were taken from 1-in. structure keel bars, sand cooled.

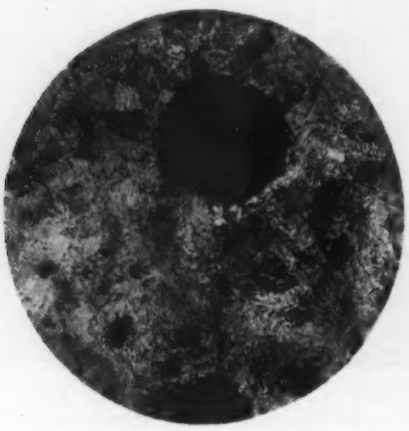
TABLE I

PHYSICAL PROPERTIES V. METAL SECTION

Metal section, in.	1	2	6	12	18*	36*
Tensile strength, psi	86,900	80,400	71,700	64,200	57,600	44,600
Yield strength, psi	61,200	63,900	57,900	56,400	48,200	43,000
Elongation, pct	6.3	5.0	3.5	3.5	4.0	2.0
Hardness, Bhn	205	207	201	185	176	161

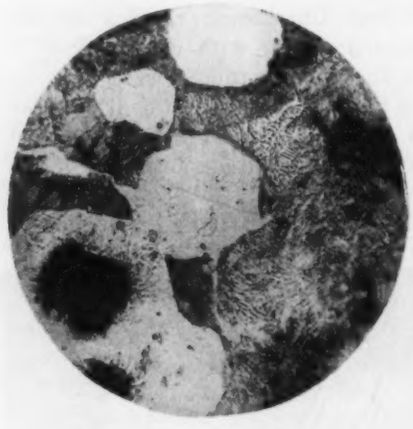
Properties listed are averages from keel bar tests on cast Ductile Cecolloy except as noted.
* Properties from cast-on coupons.

Table I lists averages of a number of tests showing physical properties obtained in various sections and in cast-on coupons. These coupons were 2 in. in diam. by 6 in. long, and were attached to the heaviest section of the casting being poured. They are identified in the table with the metal section to which they were attached. It is believed that the properties in the coupons are lower than in the casting because



A

Analysis, pct		Physical Properties	
Total C	3.47	Tensile, psi	82,000
Si	2.26		
Mn	0.61	Hardness, Bhn	298
P	0.24		
Ni	1.33		
Mg	0.057		



B

Analysis, pct		Physical Properties	
Total C	3.51	Tensile, psi	95,400
Si	2.76	Yield, psi	77,900
Mn	0.54	Elong., pct	2.00
P	0.09	Hardness, Bhn	249
Ni	1.04		
Mg	0.050		

FIG. 3—Chemical composition has a pronounced effect on matric structure of ductile iron. The composition shown in A above resulted in graphite nodules in a pearlitic matrix, while the composition in B produced free ferrite as well.

the method of attachment prevented proper feeding for structural soundness.

Chambersburg ran substantiating tests on a great many of the special properties that were previously announced. In addition some work which was not formerly made known was done. Since vibration damping properties are of major importance in the design of machinery, a comparison was made of the relative damping properties of 30,000 psi tensile cast iron Ductile Cecolloy, and 0.30 pct C cast steel.

This was done by photographing the wave motion developed on an oscillograph screen by vibrating standard specimens over a pick-up coil. These were securely clamped and released by a trigger from a fixed deflection. The test setup is shown in Fig. 4. The plot of the wave motions is shown in Fig. 5. Although these are actually velocity and not deflection curves, they represent accurately the relative damping rates and show that the damping properties of ductile iron are much better than previously thought.

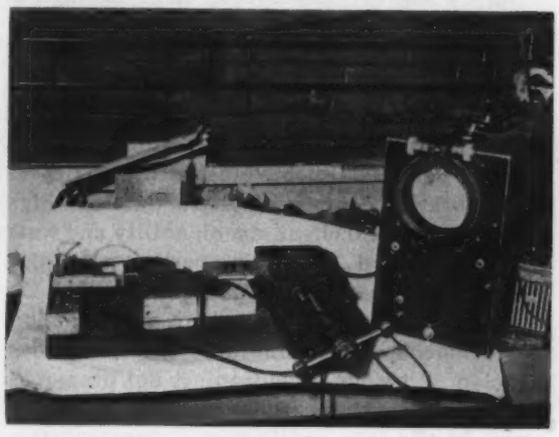


FIG. 4—Vibration damping tests were conducted by vibrating standard specimens over a pickup coil and recorded by photographing the wave motion developed on an oscillograph screen, with the setup shown.

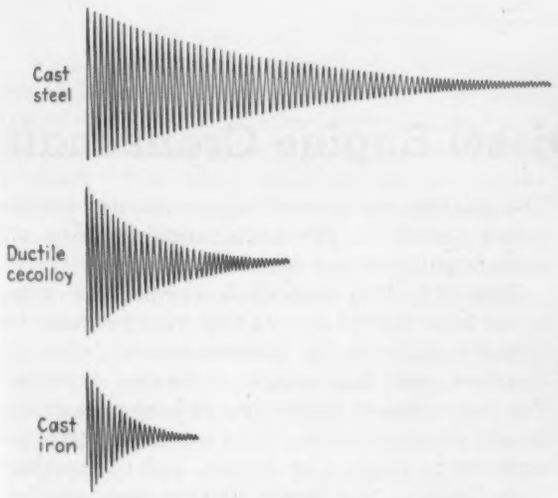


FIG. 5—Curves indicating relative damping characteristics of cast steel, Ductile Cecolloy and cast iron as obtained on oscillograph recordings of similar specimens.

TABLE II

SHRINKAGE COMPARISON

Material	Gray Iron (3.20 pct C)	Spheroidal Iron
Mold length, in.	30 7/16	30 9/16
Casting length, in.	30 1/16	30 3/16
Linear shrinkage, pct	1.23	1.23
Shrinkage, in. per ft	0.15	0.15

Some work has been done on surface hardening of wearing surfaces with induction heat, and it has been determined that certain grades of the material are easily hardened to Scleroscope 50-60. There are, however, still some problems to be worked out before standard procedures for this can be determined.

The foundryman is more directly concerned with foundry properties such as linear shrinkage, hot strength, fluidity and liquid shrinkage. Patterns must be designed and sound castings produced of the material before its special properties have any value. Of first concern is linear shrinkage during cooling. This determines whether or not patterns made for cast iron or steel may be used for ductile iron without alterations.

A simple test was made by casting Ductile Cecolloy into a mold which had a 2 x 6-in. cross-section and was approximately 30 in. long. The mold length was gaged before pouring and the casting was gaged when cold. Table II shows the results of this test and comparative figures for 30,000 psi tensile cast iron. The linear shrinkages of Ductile Cecolloy and cast iron are almost identical and, therefore, patterns built for cast iron can be used for Ductile Cecolloy without change.

To check the hot strength of the metal, a test casting was made in a cement-bonded mold for maximum strength. The 30-in. long I-sectioned casting shown in Fig. 6 is the test casting. This

FIG. 6—Test casting made to check hot strength of ductile iron, designed with sharp corners for maximum stress concentration. The casting showed no signs of hot tearing due to high mold stresses.

casting was designed with sharp corners for maximum stress concentration. The flanged ends were held by the sand mold, thus stressing the center section during cooling.

The flanges were bent slightly by the stresses, but otherwise the casting showed no signs of hot tearing due to high mold stresses. The shrinkage seen in the corners was caused by pouring the casting in an open mold with cold metal, thus preventing proper feeding. While this test was crude, it indicates that Ductile Cecolloy has high hot strength and therefore requires no special molding and sand practice to prevent hot tears and cracks.

Fluidity is not accurately determinable for any metal and present knowledge of this property of ductile iron is limited to observation of pouring and experience with gating castings. Observations indicate that the liquid metal has a high surface tension which ncessitates the use of large gates for pouring. However, thin and intricate-shaped mold cavities are easily filled, because the metal is highly fluid. The metal surface tends to freeze very quickly if allowed to come to rest, so it should be kept moving in the mold to insure against cold shuts or misruns.

It was first believed that the metal would have high liquid shrinkage and would therefore require feeding at all inherent hot spots to produce sound castings. To check this, a number of castings from early heats were broken through the inherent hot spots for study of the structure. Fig. 7 shows the structure of two typical castings. The only flaw was in the heavy section under the port core in the casting on the right. It was later determined that the defect could be eliminated by pouring hotter and faster. From experience with large castings, it has been established that complex designs are readily producible without special molding practices.

FIG. 7—Fracture through critical sections of two heavy castings, showing that soundness in large and complex castings of ductile iron is obtainable without special molding practices.

The design engineer now has at his command a high tensile ferrous material which is easily castable and has such valuable properties as good vibration dampening characteristics, high yield strength, excellent machinability and wear resistance, good impact properties and high modulus of elasticity. If properly applied, the use of ductile iron will result in many product improvements and manufacturing economies. Development work is continuing, but properties data have not been sufficiently correlated to make ductile iron application a simple matter. For the present, at least, it is recommended that the designer, metallurgist, and foundryman work closely with each other to insure the most advantageous application of ductile iron.

ULTRASONICS

Determine Life of Diesel Engine Crankshaft

ULTRASONIC inspection gave a clean bill of health recently to a 26-year old diesel engine crankshaft at the Perth Amboy Dry Dock Co., Perth Amboy, N. J.

Twelve webs and the thrust disk of the crankshaft were inspected with a Sperry Reflectoscope. The webs, measuring 12½x18x4⅞ in., were tested by applying a searching unit to edges, sides and curved surfaces. The shaft thrust disk, approximately 16 in. diam and 12½ in. thick, was tested from the periphery and sides.

Ultrasonic vibrations were transmitted into the material and the reflections indicated on the cathode ray tube screen of the Reflectoscope. The relative positions of discontinuities on the screen served to distinguish defects from oil holes, stud holes and edges of material.

Generally, the crankshaft components were found to be free of defects that might reduce the strength of the shaft. Several minute defect indications were interpreted as forging ruptures. Two webs showed indications of larger, centrally located discontinuities. Shots were made from all surfaces to orient the defects and to establish their limits. The larger defects were not believed to materially reduce the strength of the crankshaft. The tests were made by Sam Tour & Co., New York.

High Grade Iron Ore
FROM LOW GRADE DEPOSITS

One of the fastest-growing commercial processes for extending iron ore reserves through beneficiation of low grade deposits is Heavy-Media Separation. HMS last year accounted for 2 million tons of shipments from the Lake Superior area. Costs of HMS beneficiation of low grade hematite average 10c per ton. This could mean that the low grade hematites will be worked first, before heavy tonnages of taconite are tackled. HMS is now being used on 15 different materials.

By R. W. HEDGES
Mineral Dressing Div.,
American Cyanamid Co.,
New York

TOO little public notice has been given to activities on the iron ranges in the United States which are adding to our reserves of commercial iron ore. By means of improved methods of up-grading low-grade deposits, commercial reserves have been extended.

What were merely deposits of iron-bearing minerals before, are now, because of new methods of beneficiation, commercially valuable iron ore reserves from which pig iron can be made at a profit. The most important of the newer methods in commercial use on a large scale is Heavy-Media Separation. This fastest-growing commercial process in wide use for the beneficiation of iron ores was introduced and developed on the Mesabi range in 1939. There will be 13 plants in operation during the 1950 season in the Lake Superior region plus two plants in the Alabama district, one in Texas, one in Canada, and one in Sweden, with an estimated combined yearly feed rate of over 10 million tons. This estimation is based on 6 months' operations for the plants on the Lake Superior ranges.

American Cyanamid Co. is technical and sales representative for these processes in behalf of the American Zinc, Lead & Smelting Co., which controls the patents.

Heavy-Media Separation makes a separation between the iron-bearing components of iron ore and the silica, based on the difference in their specific gravities. The ore is fed to one of various designs of separatory vessels containing a suspension of finely ground ferrosilicon in water maintained at a specific gravity between that of the iron and that of the silica.

In the process the hematite (sp gr approx. 5.0) sinks and the silica (sp gr approx. 2.7) floats. The ferrosilicon adhering to the products is washed off and is recovered by magnetic means for reuse. However, in the size range most desirable for blast furnace operation, there is a considerable percentage of material in an ore that does not break cleanly into either hematite or silica but into particles that contain both hematite and silica. As a result, the specific gravity of these mixed particles falls anywhere between 5 and 2.7 depending on the relative amounts of iron and silica in a particle.

It is essential to the economics of any process for low grade ores that mixed particles contain-

ing an appreciable amount of iron be recovered. Herein lies the success of HMS over methods previously used on low-grade ores. The gravity of the medium can be maintained within ±0.01 of a predetermined figure calculated to recover the desirable pieces of intermediate specific gravity and allow the undesirable intermediate pieces to be wasted.

Costs per ton of feed charged into typical HMS units run about 10¢ per ton for hematite and about 23¢ per ton on siderites. This includes labor, power, media, maintenance and supplies. It does not include amortization of the plant.

By the use of HMS, 2 million tons of concentrated ore were made available in 1949 from the Lake Superior district for the production of pig iron. Because this ore was produced from low-grade deposits, it was possible to keep 2 million tons of "merch" ore in reserve for the future. It is expected that the shipment of HMS concentrated ore will increase in 1950.

Blast furnace operations require iron ores of certain specifications, chief of which is that the ore contain at least 51.5 pct Fe (natural) and not more than 10 pct SiO_2, although lower grade material is used. Shipments containing more than 51.5 pct Fe (natural) command a premium and those containing less are penalized.

There are two general categories of commercially valuable iron ore deposits from which shipments are made from the Lake Superior area. At present, the most important class is the "merch" ore of which about 54 million tons were shipped in 1949. "Merch" ores are high grade and are used by the blast furnaces without any beneficiation except crushing and screening. Unfortunately, reserves of "merch" ores are limited and will be exhausted at the present rate of depletion in a relatively short time.

The second class of ores consists of those which can be profitably smelted after beneficiation. Beneficiation may be described as a process by which salable or merchantable iron ore is manufactured from raw materials that contain iron.

"Wash" Ores Are Limited

There are considerable tonnages of ore that can be brought up to specification by log washing. These are known as "wash" ores because objectionable fines, clay, etc., can be removed from the ore by washing in a long tank in which blades attached to two long shafts abrade the ore in water. In 1949 approximately 12 million tons of "wash" ore was shipped from the Lake Superior district. Ores of the "wash" class are also definitely limited and will be exhausted in a comparatively short time.

HMS THREE MAIN FUNCTIONS

1. Production of a finished concentrate and a rejectable waste in one operation.
2. Rejection of a waste product leaving an enriched product for further concentration by other methods after reduction in size.
3. Production of a finished concentrate, and a low grade reject for additional treatment.

The second category of ore amenable to beneficiation consists of those that can be prepared for use by jigs. Jigging is more expensive than log washing and consists of processing the ore through a pulsating column of water. The lighter silica and fines rise to the top and the heavier iron-bearing pieces fall to the bottom. In general, "jig" ores can be more efficiently treated by Heavy-Media Separation and several "jig" plants have been replaced by HMS.

The third class of ores suitable for up-grading by beneficiation consists of those that can be economically concentrated by Heavy-Media Separation, often called hi-density or sink-float. Other processes are being used on a small scale and experimentally such as magnetic separation, froth flotation, and the Dutch States Mines Cyclone Separator, and are usually devoted to the concentration of fines.

Techniques for Taconites

All of the above methods of beneficiation are used for the treatment of hematite ores. There is also a tremendous reserve of iron-bearing formations called taconites. Contrasted with the hematite ores, the taconites are hard, expensive to drill, finely disseminated, and must be specially prepared for blast furnace operation. Solution of the many problems involved in using taconitss is being investigated on many fronts at the present time. Froth flotation, Dutch State Mines Cyclone Separator and magnetic separation show considerable promise for the beneficiation of taconites.

In the first HMS plant, a finely ground lead ore (galena) was used as the heavy constituent of the medium but difficulties in recovering the galena for reuse prompted the search for a more satisfactory material. Ferrosilicon, a magnetic furnace alloy of 85 pct iron and 15 pct silicon, replaced galena because ferrosilicon is recoverable by simple magnetic means, resists abrasion and corrosion, has a high specific gravity, is not expensive, and is readily available as a standard commodity. Average loss of ferrosilicon in the process is about ½ lb per ton of feed.

A standard flow sheet of the HMS process appears in Fig. 1. An open-top cone with an outside airlift is shown as the separatory vessel. Several other types of separatory vessels are in

use such as the cone with inside airlift, Akins classifier, Hardinge classifier, and drum-type vessels. The standard flow sheet is the same except for minor modifications for all types of vessels. In the various classifier and drum-type vessels, compressed air is not needed; the sink is removed by other means.

Referring to the flow sheet, the HMS feed, having been crushed to the proper size, is screened (1) to eliminate as much as possible of the minus ⅛ in. material because, while HMS can make a separation of finer sizes, it is most efficient on material from which the fines have been screened. The screened ore is fed to a separatory vessel (Item 2, above) which is filled with a suspension of finely ground ferrosilicon in water maintained at ±0.01 of a predetermined specific gravity. The silica floats and is removed continuously by overflowing a weir. The iron-bearing particles sink and are removed continuously by an airlift (3). The float (silica) and sink (iron) then go to drainage and washing screens (4) (5). On the drainage screen more than 90 pct of the medium, some of which overflows with the float and some of which is elevated in the airlift with the sink, drains off the screen and is returned to the separatory vessel by a pump (6). On the washing screen, substantially complete removal of adhering medium and fines is accomplished by water sprays.

The drainage product from the washing screens is too dilute and contaminated with fine ore to be returned to the vessel and is treated in a novel manner.

First, the diluted, contaminated medium is passed through magnetizing blocks (7) which magnetize the particles of ferrosilicon and cause mutual attraction and flocculation. This makes settling in the thickener (8) faster, and less area and depth are required.

The thickener solids are pumped to the magnetic cleaning circuit comprising a primary (11) and secondary magnetic separator (12) operated in series. The tailing or reject from the secondary magnetic separator flows to waste or, if sufficiently valuable, may be sent to some other form of beneficiation. The reclaimed medium from the primary and secondary magnetic separators flows or is pumped to the densifier (13) to remove excess water and to restore the medium to the correct specific gravity. The medium is then conveyed back to the separatory vessel through the drainage hopper and medium return pump (6). However, the medium has been magnetized before entering the thickener and again by the magnetic separators. In order to remove the magnetic charge on the ferrosilicon particles, the reclaimed and cleaned medium flows through a demagnetizing coil after leaving the densifier and before entering the drainage hopper.

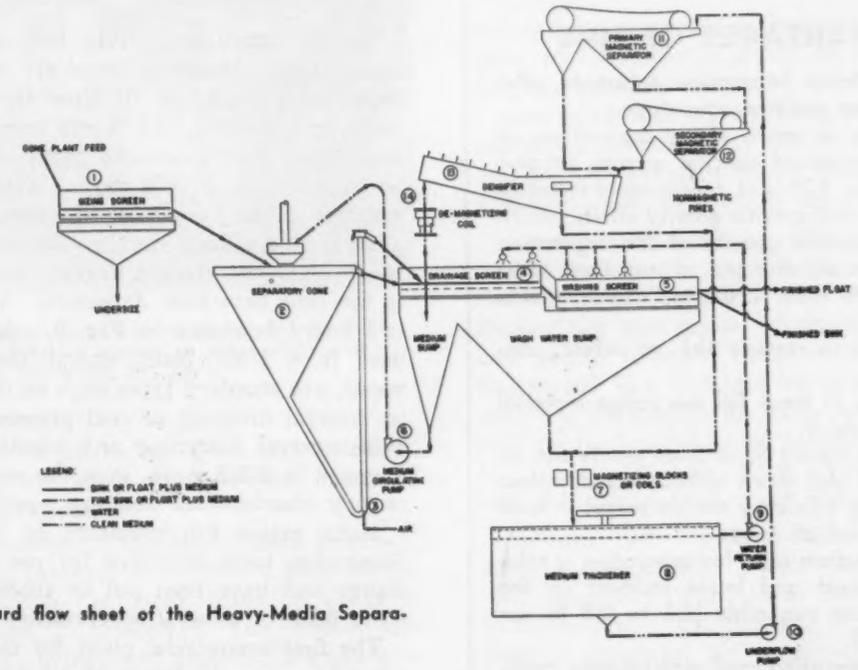


FIG. 1—Standard flow sheet of the Heavy-Media Separation process.

The actual separation is accomplished in a matter of seconds. More time and equipment is devoted to the medium reclamation and cleaning system. Yet this is necessary since an appreciable percentage of the medium is washed off and drains from the washing screen. If this medium were continually lost, the process would not be a commercial success.

There are other systems employing the sink-float principle but many of these failed to achieve commercial success mainly because of the difficulty in reclaiming the media used. An excellent separation can be and is being made in

laboratories using heavy liquids but the liquid media are expensive and difficult to reclaim for reuse, limiting the use of heavy liquid separations to small scale, laboratory use.

One of the magnetic separators used in a large HMS plant is shown in Fig. 2. The cross-sectional drawing shows how the continuous belt unloads the reclaimed ferrosilicon which builds up on the magnets.

ADVANTAGES OF HMS

Heavy-Media Separation processes offer the following positive advantages:

1. Ability to make sharp separations at any predetermined specific gravity ranging from 1.25 to 3.75 and continuously maintain this preselected specific gravity within ±0.01.
2. The specific gravity of the separating medium can be changed at any time, when necessary to meet changing characteristics of feed.
3. Ability to remove sink, or refuse, continuously.
4. Ability to treat full size range material without presizing.
5. Heavy-Media Separation plants can be started and shut down without loss of values or operating efficiency nor do surges in feed rate cause loss of values.
6. The medium used for separation is relatively low cost and losses incident to the operation are negligible (0.2 to 0.8 lb per ton of feed).
7. Low operating and maintenance costs.
8. Separatory units have large capacity and occupy relatively small space. Prefabricated plants are available on quick notice from several manufacturers.
9. Capital cost low in comparison with installation of competitive processes of equal capacity.

TYPES OF ORE TREATED*

1. Ores whose valuable constituents are liberated from unwanted mineral at a grind of 48-mesh or coarser.
2. Ores containing valuable minerals in the form of lenses or veins separated from each other by barren gangue.
3. Ores containing barren gangue which can be rejected after coarse crushing.

**Hematite, siderite, limonite, certain forms of hematite-magnetite are now treated in one small plant in Sweden.*

To the uninitiated, HMS may appear to be complicated. However, there are more than 75 commercial plants of all types in operation or under construction and it has been found from experience that successful plant operation can be mastered in 3 or 4 days. Many plants are operated by only one man who controls all variables from a central station. Automatic controls to regulate the specific gravity of the medium in the cone have been developed. A typical control board is shown in Fig. 3. All equipment used in a HMS plant, except the separatory vessel, are standard types such as may be found in mineral dressing or coal preparation plants. With several designing and construction firms engaged in HMS work, even the vessels are becoming standardized and are readily available.

Many major improvements in Heavy-Media Separation were developed for use on the Iron Range and have been put to successful use in other fields of mineral beneficiation.

The first commercial plant for the concentration of iron ores by Heavy-Media Separation was placed in operation at the Merritt plant of Butler Brothers in 1939 after extensive pilot plant testing. Before this time the low-grade ores mined at the various Butler properties were treated by

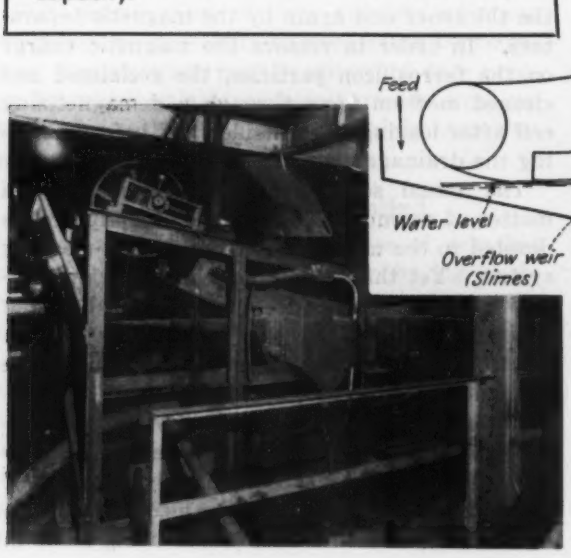


FIG. 2—The magnetic separator used for media reclaiming in an HMS plant. Diagram in the inset is a cross sectional drawing showing how the continuous belt picks up ferrosilicon particles at the magnet face and drops them into hopper at right.

jigs but the ore encountered at greater depth in the open pits did not respond satisfactorily to jigging.

During the 1949 season, Butler Brothers (now

operated by M. A. Hanna Co.) operated two Heavy-Media Separation plants. At the Patrick plant, 360 tons per hr of ore were concentrated in two 78 in. Akins separatory vessels in a size range of 1⅝x¼ in. A Hardinge separatory vessel was used at the Harrison plant to beneficiate 260 tons per hr of ore in a size range of 1⅝x3/16 in. The feed to HMS assayed approximately 54 pct Fe and 17 pct SiO_2. About ¼ of the feed is discarded as float assaying 36 pct Fe and 43 pct SiO_2. The sink or concentrate from HMS assays 59 pct Fe and 9 pct SiO_2. Both of these plants are again scheduled for operation during the 1950 season.

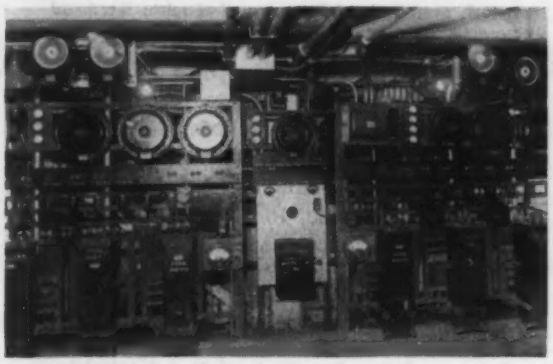


FIG. 3—From this electrical control board, one man and a helper operate an entire HMS plant processing 250 to 300 tons per hr.

A good example of the use of HMS to extend the life of a property is the Grant mine of the Inter-State Iron Co., Buhl, Minn., a Jones & Laughlin Steel Co. subsidiary. The "merch" and "wash" ores having been depleted, a small prefabricated HMS unit known as a Mobil-Mill, built by the Western Machinery Co., was placed in operation in August 1949 to treat 150 tons per hr of ore in a size range of 1½x⅛ in. The separatory vessel is an open-top cone 10 ft in diam with an internal airlift for the removal of the sink from the cone.

Now being built for operation during the 1950 season by Inter-State at their Hill-Annex property is a large custom-built HMS plant which will have a feed capacity of 400 tons per hr.

Another large iron ore shipper is the Cleveland-Cliffs Iron Co. which began using HMS at their Hill-Trumbull plant on the Mesabi in 1945. During the first season of operation about 175 tons per hr in a size range of 1½x⅜ in. were beneficiated in a cone-type separatory vessel. The cone was replaced by an Akins separatory vessel and the feed rate was increased to 300 tons per hr. During the 1949 season, Hill-Trumbull operated a Hardinge Separatory Vessel.

In June 1949 Cleveland-Cliffs put into operation a second HMS plant: the Holman-Cliffs unit using two 78 in. Akins Separatory vessels at a feed rate of 440 tons per hr. A third HMS plant is scheduled for operation by Cleveland-Cliffs. In July 1950 the Canisteo unit will start, using a Hardinge separatory vessel to treat 250 tons per hr of iron ore.

The Mary-Ellen HMS plant of the Stanley

RANGE OF SEPARATING GRAVITIES OBTAINABLE

Highly efficient separations have been made on coal at specific gravities ranging from as low as 1.25, using magnetite medium. With this medium it is possible to make highly effective separations up to 2.20 sp gr. For the range 2.20 to 2.90 mixtures of magnetite and ferrosilicon are satisfactory. Above 2.85 ferrosilicon alone is used and separations at 3.65 sp gr have been made commercially.

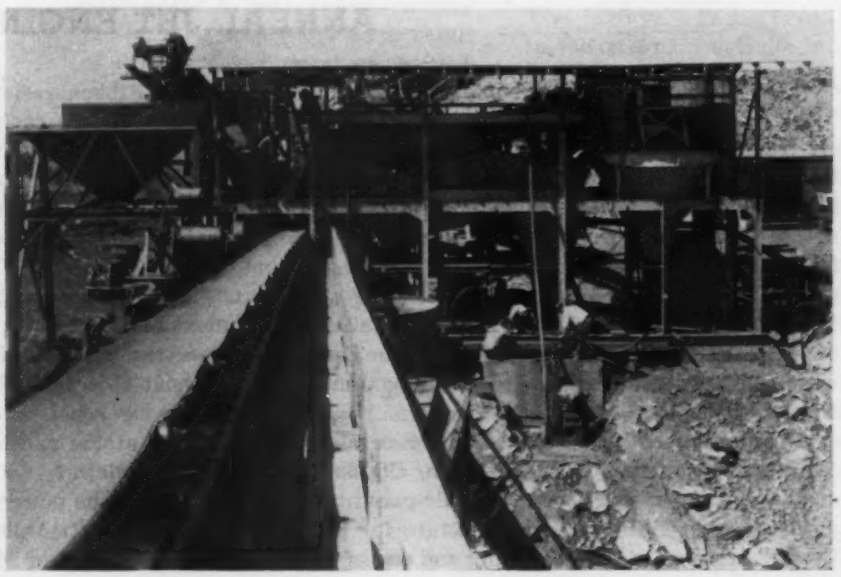


FIG. 4—The Western Machinery Co. Mobil-Mill operated by Rhude and Fryberger at Ironton, Minn. With a 10-ft cone separation vessel, this plant processes 100 tons per hr of low-grade hematites. The plant is designed to permit dismantling for moving to another site when desired.

Mining Co. is of particular interest because a certain type of taconite is being successfully up-graded. The ore treated is known as banded taconite, characterized by alternate layers of hard, low-grade taconite and softer, higher grade hematite. The deposit is as low grade as any being worked on the range, containing large amounts of 30 pct Fe material. The final concentrate from Mary-Ellen averages 53 pct Fe and 13 pct Silica.

The Mary-Ellen HMS unit commenced operating in August 1948. Feed to the beneficiation plant consists of ¾x⅛ in. ore at a rate of 125 tons per hr. Separation takes place in an Akins vessel. Shipments from Mary-Ellen totaled 174,438 tons in 1948 and 300,748 in 1949.

On the Cuyuna range Rhude & Fryberger are successfully using HMS to extend the profitable life of the Pennington Mine near Ironton, Minn. In August 1948 a Mobil-Mill, Fig. 4, began treating the lean ore from the Pennington pit at a rate of 140 tons per hr, in a size range of ¾x⅛ in. An indication of the importance of HMS in the Lake Superior area is that the Rhude Media Co. was recently formed to grind ferrosilicon right on the Range for HMS use.

Four other materials of interest to the steel industry are presently being concentrated by Heavy-Media Separation. A substantial tonnage of bituminous coal is prepared for coking in four large plants. Fluorspar for metallurgical use is produced from low-grade deposits in five plants. Magnetite for the manufacture of refractory brick is being concentrated in two plants. A small

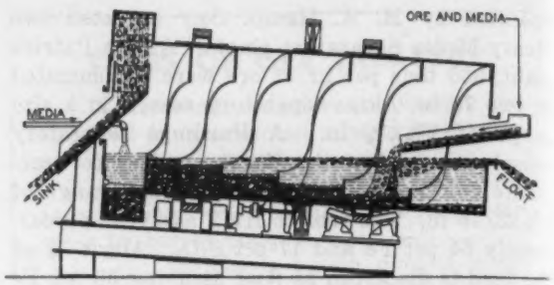


FIG. 5—Developed on the Iron Range for HMS work, the Hardinge separator is used in place of cone vessels in some plants. It is easy to stop and start, even under full load, and requires less head room than a cone.

plant commenced operating recently in the Philippines to beneficiate chrome ore, useful as an alloying agent. Very encouraging results have been obtained on a manganese ore on an experimental scale. All told, 15 different materials are presently being concentrated by HMS.

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ELECTRIC FURNACES

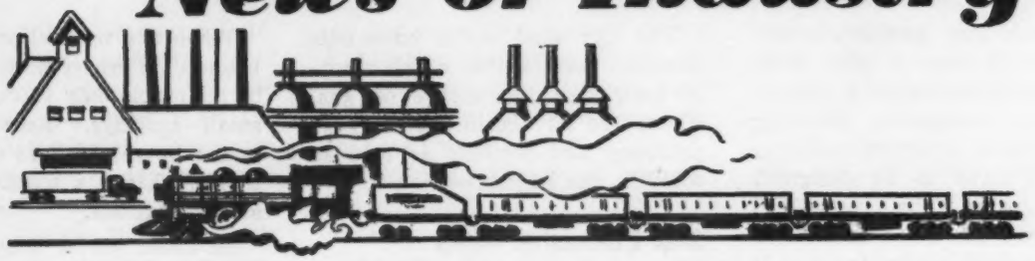
ANNEAL JET ENGINE PARTS

TWO rectangular pit ribbon resistor electric furnaces have been designed for annealing aft-frames of aircraft turbo-jet engines. The fabrication of these aft-frames requires a carefully controlled annealing cycle to relieve stresses within the metal work of the stainless steel frames. These furnaces operate with a protective atmosphere and are capable of annealing four frames at once, two to a furnace. Installation of the units is at Solar Aircraft Co., San Diego, Calif., and were designed and built by General Electric Co.

An atmosphere gas converter supplies a protective atmosphere of CO_2, nitrogen, CO, and a small quantity of hydrogen. The air-gas ratio is adjusted to produce a neutral mixture for purging the furnaces at the beginning and end of each cycle. Ribbon resistors, supported on the walls of the furnace casing, provide radiant heat to bring the equipment up to the proper temperature. Protective atmosphere circulating cooling systems built integral with each furnace permits forced but regulated cooling after the heating cycle is completed.

The frames are put in the furnaces and removed from them at a temperature below 500°F; thus the material is completely stress relieved without objectionable oxidation. The heat treating cycle consists of heating the material to 1650°F at the rate of 100°F per hr and holding the material at 1650°F for 3 hr. At the end of this time, the power input to the furnace is shut off and the atmosphere gas cooler cools the furnace at the rate of 200°F per hr to 500°F.

News of Industry



Detroit Spending Millions on Foundry Process

Major automakers believed to have put at least $2 million into resin-sand or Croning process for high production of precision castings . . . Major changes seen—*By Walter Patton*

Detroit—The automobile industry has probably invested upwards of $2 million in the so-called resin-sand, or Croning process for high speed production of precision castings. Still it remains about the most closely guarded secret in the industry. Each of the major car producers is interested in the development, which is used on gray iron, steel and aluminum castings. And the $2 million seems to be only the beginning.

Two companies have devoted more than a year of intensive research effort to this fast dry sand molding technique which was first described in Fiat Final Report 1168, PB 81284 issued by the Office of Technical Services, U. S. Dept. of Commerce, dated May 30, 1947.

Competition Is Keen

One reason for the close secrecy surrounding this work is the intense competitive rivalry that has developed. Another reason is a highly unpredictable patent situation. Crown Casting Associates, Boston, claims to own U. S. and Canadian patent applications covering the process and is offering to license foundries to use it.

Details of the process first came to light in Germany after the war and were believed to be available for unrestricted use. However, it is now contended by Crown that several of the most successful techniques were not developed until after the war and are, therefore, patentable.

Under the circumstances, it is not too surprising that the car makers are reluctant to show their hands. While this new molding process is still in the experimental and pilot stage as far as the auto industry is concerned, it is known that the results obtained thus far are so promising that many far reaching changes in metal processing in the automobile industry will almost certainly come from it.

Possible Changes

Assuming it is possible to transfer already existing experimental techniques into a satisfactory production process—and this seems entirely likely at the moment—here are some of the changes which could occur in the foundry industry in the next few years as a result of further development of the new process:

(1) Many large and small U. S. foundries may adopt the resin-sand method for making ordinary run-of-mine castings. From the standpoint of plant investment, yield and quality of the finished product, the method is attractive to both large and small foundries. The overall cost may be substantially reduced.

(2) Foundries will become much more highly mechanized than they are today. They will ultimately become the attractive, clean places of employment that industrialists have long dreamed of.

(3) Since the sand volume may be reduced more than 90 pct, much of today's sand conditioning and mold handling equipment will not be needed.

(4) Machine hours now required for some castings will be reduced in some cases as much as 75 pct. The savings will be most marked in the case of rough machining operations.

(5) Core making equipment will be simplified.

(6) Metal patterns will replace wood patterns wherever this process is adopted. Such patterns will be required in large numbers. They will be more costly and they will have to be made more accurately than present day patterns.

(7) Factory output per man-hour will be greatly increased as a result of more efficient processing and greater mechanization of foundry operations.

These changes in production foundries will not take place over-

Looking Ahead

Many current foundry techniques may be completely revolutionized by the resin-sand process. For the first time, this article reveals how important it is to the automobile industry, why automakers have already spent upwards of $2 million in developing it. Detroit Editor Walter Patton, in this exclusive account, describes some of the major changes that will take place in the foundry industry if current expectations are realized. Significant is the fact that in case of a major national emergency this method may give the metal industry its best weapon for relieving a machine tool shortage.

night. Each new production will have to go through a pilot plant stage of operation before a change-over is even attempted. Foundry equipment that is not in existence today will have to be designed, built and tested. The process will have to pay off the unamortized cost of existing equipment and it will have to do a better job than is now being done in the foundry. Despite all these obstacles, sources close to these developments predict the new process has an excellent chance to replace present foundry methods on a large scale.

How It Works

Molds made by the Croning method were publicly displayed by producers of plastic materials at the Foundry Show in Cleveland last year. Bakelite, Borden, Durez and Monsanto are the leading suppliers of the plastic material that is mixed with the sand. These firms are probably the most helpful sources of technical details on the new process.

The process works like this: After heating, the metal pattern is treated in a parting solution and a sand-resin mixture is applied to the heated pattern. After sufficient time elapses the sand and resin adhere in a thin layer to the pattern, forming a shell. Unused sand which does not adhere falls into a receptacle for reuse. For most parts, molding requires less than 2 min. Temperatures being used, methods of heating the pattern and the parts being made are closely held secrets.

The mold is jarred loose from the heated pattern by knockout pins. After removal of the pattern, molds can be used immediately or they can be stored, since they do not absorb moisture.

After clamping together, the two halves of a split mold are placed in a metal container with the gate at the top. The entire assembly is then surrounded by steel shot. The shot supports the mold and also dissipates the heat. Shakeout is possible in some cases less than 10 min after pouring. However, there are reports that shot are not required for some castings.

The dry sand molds have outstanding permeability which greatly facilitates the escape of gas. There are no significant warpage problems and sections as thin as 0.010 in. can be poured.

Seek Production Setup

Much of the attention of the automobile industry has been directed, it is believed, at making the process practical from a production standpoint. Procedures in use today are known to be much advanced as compared with the original disclosures in the Dept. of Commerce report. Much attention is being given to mechanization. Some of the steps originally used in the German process have been eliminated, it is reported.

When the method was first announced it was believed it would be adaptable only to comparatively small castings. Recent developments by researchers are believed to have lifted a number of these size limitations.

In small parts, tolerances of a few thousands of an inch can be held if desired. Dimensional stability of the molds is excellent.

It is known that one auto maker has had a pilot line for production of an exhaust valve in operation for some time. There have been recent indications that plans are under way to go into production of this part. The extent of research on other parts is not definitely known but it is believed to be extensive.

Executive Agencies Slow Up Control Planning

They await passage of law and statement of service needs... Still see Commerce Dept. handling allocations, priorities ... Steel is in controls limelight—*By Gene Hardy.*

Washington — While Congress was speeding the enactment of broad control powers, the executive agencies were moving more slowly with plans to set up control machinery. The reasons were two-fold: (1) Nothing could be done until the law was on the books, and (2) the fact that military requirements for steel, aluminum, etc., in terms of actual products and tonnages were not yet in the hands of the Commerce Dept. or the National Security Resources Board.

Voluntary Methods First

The outlook is still that the Commerce Dept. will handle priorities and allocations. Voluntary methods will be tried first, but there is a growing tongue-in-the-cheek attitude regarding their long-term efficacy. The role of the NSRB was not yet clear at press time, but it appeared likely that this agency would serve as coordinator and trouble shooter for the whole mobilization picture, filling a role similar to that of the Office of War Mobilization and Reconversion during World War II.

Steel is still No. 1 in the control picture, although aluminum may get top attention once the Commerce Dept. gets to work. Copper is next and then it is anticipated that controls will spread to a whole host of materials. The Commerce Dept. plans to set up a new office, using the present Commodity Divs. of the Office of Industry and Commerce as a nucleus. Key industry people will be brought back to help administer the program.

The Commerce Dept.'s Steel Industry Advisory Committee has already been selected on an informal basis. No meetings have been held largely because of the lack of knowledge of military requirements, but an exploratory meeting will probably be held within a week after Congress enacts control legislation.

As to when allocation will be

working, a high Commerce Dept. official would only comment, "Not for some weeks." Priorities, which would get industry off the hook, may come faster. Consumers are not expected to feel any real pinch in autos and consumer durables for "some months." Cutbacks will be coming, however, and this problem is expected to be the one that will break the back of any voluntary control system. Production limitation orders will be tried first on a voluntary basis, but there is not much hope that they will work.

Officials in charge of planning the program believe that price and wage controls are inevitable, therefore, why not now? However, they do not see any need for rationing in the near future.

Congress Ready to Give Truman War Powers

To give White House controls of production . . . Channel material into war effort, requisition property, expand capacity, regulate credit, ordering—*By George Baker.*

Washington—Congress, impressed with the need for speedy mobilization of the nation's productive facilities, this week was ready to give President Truman broad emergency powers. The authority soon to be placed at the disposal of the White House includes the power to:

White House Authority

(1) Channel materials and equipment into war production, including the power to assign priority to key war orders over less important war orders, and priority to war contracts over civilian production contracts.

(2) Requisition property for war production. But Congress also instructed the White House to return such seized property "when no longer needed."

(3) Expand productive capacity and the supply of essential materials. As far as the steel industry is concerned this expansion program will be felt mainly in expansion of existing plant and equipment, rather than in entirely new plants.

(4) Regulate consumer credit—installment buying—and to clamp down on commodity speculation.

(5) Divert a large percentage of defense orders to small business, to instruct industry to keep adequate production and inventory records, to suspend certain antitrust laws for the duration of the "emergency," and to "draft" key officials from business and industry for key government posts.

Price and wage controls and consumer rationing may yet come into reality sooner than the public thinks. The White House continues to take the view that there is only an "outside chance" that such powers will be needed in the near future, but there is a good possibility that Congress may enact these controls and tell Mr. Truman to keep them "on the shelf" for use when inflation begins to get out of hand.

In addition to giving business power to control production, Congress is giving serious thought toward bringing the Federal tax structure more nearly in line with the anticipated all-out productive effort. Tax-wise, here are some changes business can expect:

To be Expected

(1) Sharp rises in corporate and personal income taxes appear almost certain. With Congress already giving serious thought to the actual higher rates to be imposed, it is probable that the rate hikes won't become effective until late this year or early next year.

(2) "Fast write-offs" on plant and equipment are impressive as a means of stimulating expansion of production, but are not likely to be approved by Congress because of the potential loss of revenue.

(3) Excess profits and renegotiation laws are definitely in the cards. These will probably follow the pattern of World War II provisions.

There is considerable sentiment for enacting this type of tax legislation first, before plunging into the more controversial problem of raising corporate and personal income taxes.

Break for the Small

From the point of view of the small businessman, both Congress and the White House are firm in their determination to give the independent business man a break. Buying agencies — Army, Navy, Air Force, and general services administration—all have been instructed to give preference, whenever possible, to smaller contractors.

Money will not be too hard to get, once the huge military buying program gets under way. And there is a good chance that Congress may set up a "small defense plants corporation"—following the pattern of World War II's Smaller War Plants Corporation—to divert as much business as possible to "the little fellow."

Meeting Set to Return Steel Products to Export Positive List

Washington—Announcement of an initial list of steel items to be returned to the export positive list is expected to follow shortly on the heels of an informal meeting scheduled this Thursday between exporters, representatives of the steel industry, and the Commerce Dept.

Items currently under control include only those considered of strategic importance. All others have since been freed of controls. However, in view of recent developments, including the pending return of allocations and priorities, a return of numerous items to the positive list is regarded by commerce as inevitable in order to protect domestic defense requirements.

A tentative plan and listing was being drawn up for consideration at the meeting.

INDUSTRIAL SHORTS

MILBURN RETURNS—An old brand name in the gas welding industry since 1907 is now actively on the market again as a result of the incorporation of ALEXANDER MILBURN, INC., Baltimore. The new company's products will include the Milburn line of oxyacetylene cutting and welding apparatus, regulators for oxygen, acetylene and other gases.

INCREASES CAPACITY—Approximately $1½ million is being spent by ARMCO STEEL CORP., Middletown, Ohio, to modernize and expand its Zanesville, Ohio, plant. Engineers have finished the plans and construction work, already started, will be completed within the year.

SEEK SEC APPROVAL—MISSION APPLIANCE CORP., Hawthorne, Calif., applied last week to the Securities & Exchange Commission to obtain $1 million in new financing for construction of a new plant in the Middle West for production of heating equipment.

SALES AGENCY—The ALABAMA FUEL SALES CO., Birmingham, has been formed as exclusive sales agency for the Alabama Fuel & Iron Co. Prince Debardeleben, president of Alabama Fuel & Iron Co., will be vice-president of the new firm and L. Gordon Scarboro, president. Operations will start immediately.

TAKES OVER—The business of the Maryland Oxygen Co., Baltimore, has been assumed by the NATIONAL CYLINDER GAS CO. and continued at the same address. There has been no change in personnel or policies.

TOOL SALES—Lovejoy Tool Co., Inc., Springfield, Vt., manufacturer of milling cutters, boring heads and other special tools, has appointed C. B. DEKORNE, Grand Rapids, as sales representative for western Michigan.

NEED O-RINGS?—Parker Appliance Co., Cleveland, has appointed SHIELDS RUBBER CO., Pittsburgh, as distributer for their O-rings available in a wide range of sizes and compound types to meet special service requirements in sealing hydraulic and other fluid-handling systems.

MAGNETIC SHEET PILER—The installation of their latest type of magnetic conveyers and sheet pilers at the Carnegie Illinois Steel Corp. Gary sheet and tin mill was recently made by the D. B. ENGINEERING WORKS of Gary. This new magnetic piler can handle sheets 74 in. wide, 16 ft long, ⅛ in. thick at a speed of 400 fpm.

FRENCH ORDER—A $2,650,000 order for two 50,000-kw turbine generators to supply power for mining operations in France has been received from Houillieres du Bassin du Nord et du Pas-de-Calais, a division of the country's national coal industry, by the WESTINGHOUSE ELECTRIC INTERNATIONAL CO., Pittsburgh.

ADDS DISTRICT OFFICE—A new sales office in Grand Rapids has been opened by the WHEELCO INSTRUMENTS CO., Chicago. It will operate under the supervision of the company's Detroit office and will cover the state of Michigan with the exception of Detroit.

CHANGE OF ADDRESS—District sales offices of LUKENS STEEL CO. in Boston have been changed from 131 State St. to Statler Office Bldg., 20 Providence St.

EXPANDS FACILITIES—The new Cleveland office and warehouse of HARBISON-WALKER REFRACTORIES CO. will be completed about mid-October. It will increase the firm's Cleveland stock of refractories to the equivalent of about 400,000 9-in. brick and greatly expand sales and service facilities.

Crisis Pushes Plan to Spend Heavily for Stockpile Materials

White House seeks another $600 million for strategic purchasing.

Washington—An increase in procurement of strategic materials for the national stockpile is in prospect in view of Far Eastern developments and the current partial mobilization. More than $1 billion may be spent or committed over the next year.

Over the weekend the White House requested a supplemental appropriation of $600 million for this purpose—in addition to about $500 million already asked for. If appropriated, this would raise the total authorizations to $2,635 million. It is believed that if Congress grants the $2 billion production and expansion fund, as much as 20 pct may be set aside for emergency purchases of critical materials.

Authority to President

This would be permitted under the current version of the proposed Defense Production Act. It would give the president authority to purchase metals, minerals and other essential defense items without regard to present statutory limitations as to source or market prices.

In its semi-annual report to Congress, the Munitions Board said the $4 billion program is little more than half-completed. As of June 30, about $1.5 billion worth of materials was in storage and another half-billion on order. However, buying of agar, mercury, tantalite, vanadium, and refractory grade chromite has been suspended until a review of requirements for these items has been made. Baddeleyite, rutile, and zircon have been removed from the buying list.

Also, purchasing programs for 13 other items—including metal grade bauxite, celestite, emetine, amorphous lump graphite, lead, mica (muscovite splittings), sperm oil, and antimony in liquated, metal and ore forms—are either completed or nearly so.

However, purchases of rubber, copper and zinc have been lagging in particular. Tin buying, also behind schedule, has partially been offset by heavy commitments made just before the end of the fiscal year.

Stockpile acquisition has been stepped up since January 1. Since that date, contracts have been let totaling more than $400 million. About $25 million worth have been accepted from government surplus and another $16 million through ECA deals.

Rebuilding Coke Batteries

Gary, Ind. — Carnegie-Illinois Steel Corp. recently announced the rebuilding of two coke oven batteries at its Gary works. One battery, No. 13, has already been dismantled and will be returned to operation in December. The other, No. 15, in the process of dismantling, will be rebuilt by next May.

Welding, shearing, levelling and polishing facilities will be added to stainless steel rolling and finishing facilities at the corporation's Gary sheet and tin mill.

B & O Orders 38 Diesels

Baltimore, Md. — Under Equitable Life Assurance Society's leasing plan, the Baltimore and Ohio Railroad will acquire 38 diesel electric locomotives from Baldwin Locomotive Works. Fourteen will be 1600 hp freight locomotives and 24, 1000 hp switching locomotives, six of which have been already delivered.

The B & O recently opened bidding on 1000 50-ton steel box cars and 1000 70-ton steel gondola cars.

B & W Has New Welded Tube Mill

Alliance, Ohio—The Babcock & Wilcox Tube Co. recently placed in operation a new mill for producing electric resistance welded tubing. The third such unit for the Welded Tube Div. at Alliance, it will produce tubing of ½-in. OD and up with 20-gage and heavier wall thicknesses.

Record Profits Follow Steel's Top Output

Eight producers' second quarter profits jump 33.3 pct over first quarter . . . First half earnings are 18 pct over 1949 period . . . Support pledged for war effort—*By Bill Packard.*

New York—New alltime records in steel capacity and production are being reflected in the second quarter earnings reports of the nation's steel companies. When these reports are fully compiled they will show that the industry has added record earnings to its laurels.

Profits Rise 33.3 Pct

Second quarter earnings of the nation's eight top steel producers (rated on capacity) rose 33.3 pct above first quarter profits. Their earnings for the first half of 1950 are 18 pct above those of the first half of last year which was considered a remarkably good period.

Strangely absent from financial reports and press conferences covering second quarter results are predictions for the next quarter and the rest of the year. The reason is simple. It is taken for granted by all concerned that operations will be as high as the industry can produce.

Earnings of U. S. Steel Corp. are a new record for a second quarter ($69,861,496) and are the second highest for any quarter ever, being surpassed only by the fourth quarter of 1916 ($90,811,588). Republic Steel Corp., third largest producer, reported $37,702,076 income for the first half, the highest for any comparable period in the company's history.

Almost lost in the shuffle is the fact that 1950 will establish new yearly records for steel capacity, production and earnings. Of more concern right now is the manner in which the steel is to be distributed. And how much will be needed for military purposes.

Pledge Support

Steel leaders stressed that steel tonnage needed for military purposes is small compared with total output. They have pledged full support to any military program and have promised that the needed steel will be set aside for such purposes before the balance is divided among manufacturers producing goods for civilian consumption.

During the first half of this year steel for military use amounted to less than 1 pct of total sales of U. S. Steel Corp., chairman Irving

Steel Company Earnings

Company	Second Quarter '50	First Quarter '50	First Half '50	First Half '49
U. S. Steel	$69,861,496	$49,217,742	$119,079,238	$94,052,265
Bethlehem Steel	31,667,643	25,572,930	57,240,573	59,878,603
Republic Steel	21,080,742	16,621,334	37,702,076	25,477,171
Jones & Laughlin	11,005,142	5,309,828	16,314,970	15,168,899
National Steel	15,614,351	13,434,454	29,048,806	25,868,907
Youngstown S & T	10,785,832	7,490,941	18,276,773	21,043,365
Armco Steel	13,811,641	11,894,130	25,705,771	16,108,633
Inland Steel	12,143,291	9,320,463	21,463,754	16,287,534
Wheeling Steel	4,648,449	3,187,696	7,836,145	6,138,569
Sharon Steel	2,959,607	1,633,630	2,593,237	3,422,791
Allegheny Ludlum	2,300,490	2,270,681	4,571,171	1,560,001
Crucible Steel	1,304,625	759,451	2,064,076	1,954,065
Pittsburgh Steel	1,400,000	1,016,592	2,416,592	2,438,442
Alan Wood Steel	682,448	318,011	1,000,459	1,772,252
Midvale	—48,204	—178,362	—226,566	276,583
Superior Steel	258,090	134,406	392,496	286,179
Rotary Electric Steel	484,552	310,841	795,393	1,321,752
Granite City Steel Co.	1,671,673	1,201,879	2,873,552	1,595,467
Continental Steel Corp.	870,719	840,071	1,710,790	413,805
Copperweld Steel Co.	457,746	185,721	643,467	1,221,479

S. Olds pointed out. E. G. Grace, chairman of Bethlehem Steel Co., pointed to the large battle fleet and merchant fleet of ships, now in mothballs, which can be brought into use. He also called attention to the war plants, already built, which can be used again.

These facilities took a large portion of the steel output during the last war. But they are not used up; they can be used again. Thus the amount of steel needed for military purposes will be far less than some people have expected. This is especially true if the military forces are not expanded far beyond present expectations.

That is why steel leaders are so firm in their opinion that voluntary allocations can solve any problems of steel distribution which may arise. They say, "Tell us what you need, and we'll deliver it."

Prospects Meagre for Steel Sheet Imports

Some hope seen for limited exports of other steel products . . . Belgium, Luxembourg mills can add to exports . . . Mill sells ingots . . . Export sources listed—*By Ted Metaxas.*

New York — Dispirited after prowling in domestic markets for steel sheets and other steel products, some American fabricators are wondering if they can turn a neat bit of strategy by importing sorely-needed steel from Europe. If they are looking too hopefully for large tonnages from across the waters, the lenses of their binoculars are indeed rose-colored.

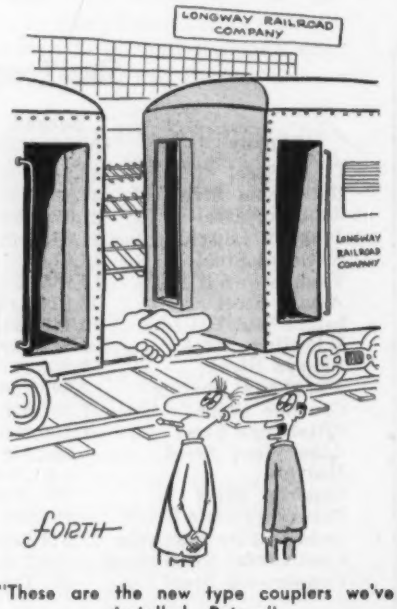
In response to a survey conducted by THE IRON AGE last week on the possibility of getting sheets from Europe, informed sources answered with an overall "no" that left the usual leeway for freak sales leaking through to the quick. Only feeble encouragement for substantial exports of general steel products was given.

Belgium and Luxembourg — Hand mills of the two countries are not capable of producing enough sheets for export but the industry is in a position to make a larger contribution to America's general steel needs by making available more ingots, plates, structural shapes, reinforcing bars, merchant bars, and wire products.

Openhearth steel ingots are up for sale by Usine & Acieres Allard Marchienne-au-Pont, Belgium, a casting firm with surplus steelmaking capacity. Very short delivery at "competitive" prices was promised.

Export potential of strip and sheets will take an upward stride by the middle of 1951 with completion of installations at Esperance-Longdoz, Liege; Arbed, Luxembourg; and Ferblatil, Liege. Leon G. Rucquoi, 30 Rockefeller Plaza, New York City, is technical consultant to industries of both countries.

Germany — Total tonnage of steel products available for export at this time is very slight and many German mills have withdrawn from the market for the balance of the year. American firms ordered as heavily as possible after the outbreak of Korean hostilities. Rolling capacity is low, especially since the Russians carried off Germany's major continuous rolling mill at Dinslaken. The widest cold-rolled strip that can be rolled in Germany is 24½ in. at 1000 tons per month volume. Thus far this year, about 100,000 tons of ingots and steel products have been sold to America. Recently a substantial order for oil country goods was accepted.



"These are the new type couplers we've installed, Peters."

Even if the Allied Commission raised Western Germany's steel production quota, rolling capacity would still be limited and considerable time would elapse before it could be boosted. The Germans are relying on spiralling steel needs and demand from America to force the Commission to look favorably on their request for added steel production.

Inquiries may be made at the German-U. S. Chamber of Commerce, 11 Broadway, New York City, or to the Assn. of the Iron and Steel Industry, Humboldt 31, Dusseldorf, Germany, a trade association. Kurt Orban, of 21 West St., New York City, represents the German Steel Union Export Co.

France — "It is practically impossible to get cold-rolled sheets for export from French mills" but limited quantities of hot-rolled sheets and structurals may be available. French mills have been working at 87 to 90 pct of capacity but the situation may change overnight. Some surplus sheets may be exported when the Sollac mills at Hayange and Ebange in the Moselle area begin to produce.

Queries may be forwarded to the French Commercial Counsellor, Room 308, 610 Fifth Ave., New York City, which will supply a listing of mills on request. Shipments must be made through agents with official export licenses after negotiations with mills are completed.

England — "None whatsoever" was the verdict on sheets. England cannot meet domestic needs and is fishing for sheets in America. Some plates may be available for export and some heavy structurals,

no bar sizes. An informed source denied a rumor that England was exporting sheets to this country with one hand and importing them with the other.

Canada—The country has recognized the shortage of sheets in America and has issued export permits for small shipments. This reverses tradition, for Canada relies heavily on the U. S. for its sheets. Sheet steel exports from Canada must be approved by the Export Permit Branch of the Dept. of Trade and Commerce, Ottawa. Steel supply coordination has been maintained by U. S. and Canada in meeting their joint defense program needs.

Remington and Crucible Form Titanium Firm

Third jointly owned titanium producer . . . Now in Bridgeport; will soon move to Pittsburgh . . . Crucible's steel output not to be affected . . . Du Pont will supply sponge titanium.

New York—A new firm is being formed to produce titanium and titanium alloy products. Joint owners of the enterprise are Remington Arms Co., Inc., Bridgeport, Conn. and Crucible Steel Co. of America.

Knowledge, patents and manufacturing techniques developed by Remington and Crucible will be pooled in the new company. Plans call for production of sheets, rods, tubes, wire, forgings, castings and other fabricated forms of titanium for widespread industrial uses.

For the present, sales of titanium products will be handled from the Remington offices in Bridgeport. But all operations are scheduled to be moved to Pittsburgh at a later date.

Remington has been producing 125-lb titanium ingots by melting sponge titanium furnished by its parent firm, E. I. du Pont de Nemours & Co., Inc. Du Pont will continue to supply the new firm. Expansion of present facilities is planned, and some new facilities are to be built in Pittsburgh.

It is expected that they will be producing ingots weighing 250 lb within a month. Production of 500-lb ingots from new facilities in Pittsburgh is expected in about 3 months.

While building its organization and new facilities, the new company will continue a full-scale research, development and manufacturing program. It will also continue to supply titanium for industrial application studies now in progress. These studies are principally in the aircraft industry.

Although some of Crucible's facilities will be used in processing of the titanium products, there will be no change in normal steel operations of the Crucible plants. Crucible is a large producer of specialty steel, including tool steel and many types of alloys. Facilities for this type of production can readily be used in fabricating titanium.

Other titanium producers are Titanium Metals Corp. of America, which is jointly owned by National Lead Co. and Allegheny Ludlum Steel Corp.; and Kennecott Copper Co. and New Jersey Zinc Co.

Titanium Is Unique Metal

New York—Titanium is light, strong and corrosion resistant. Its remarkable combination of properties makes its continuing development of special interest to all facets of the metalworking industry.

Titanium ore is abundant, but is usually found with other elements and compounds, from which it must be separated. Under present practice the metal is melted from sponge made from this ore.

For additional information on titanium see The Iron Age, July 27, 1950, p. 60; April 6, 1950, p. 85; March 16, 1950, p. 101; February 16, 1950, p. 119; January 19, 1950, p. 63.

Senate, House Committees Start Shaping Up Truman Taxes

President says $5 billion boost won't keep Treasury out of red.

Washington — Business firms and individuals are faced with the prospect of bigger tax bills soon.

Tax-writing committees in the Senate and the House began work this week on President Truman's request for $5 billion a year in new corporate and income taxes.

"Restrain Inflation"

Mr. Truman told Congress he realized a $5 billion hike in the government's annual take would not pull the Treasury out of the red. But he said it would help.

"It will serve to restrain inflationary forces generated by increased defense expenditure," he wrote the Senate and House revenue-raising committees.

Specifically, Mr. Truman asked Congress to retain the new revenue provisions of the existing tax bill, and supplement them with increases in corporate and individual rates. Three adjustments in the bill would be required:

Changes Needed

1—Eliminate all proposed reductions in wartime excises, but retain the loophole-closing, dividend-withholding and life insurance company provisions.

2—Adjust the revised corporate rate structure by increasing the normal corporate rate from 21 to 25 pct. Taking into account the 20 pct surtax contained in the bill, and the $25,000 exemption from surtax, this would result in a 25 pct tax on the first $25,000, of a corporation's income, and a 45 pct tax on the balance.

3—Increase individual income tax rates to the "tentative" levels adopted in 1945, by removing the reductions made previously.

Continental Can Lists Profits

New York—Continental Can Co., Inc., net earnings for the year ended June 30, 1950 were $13,496,651. Net sales were $357,795,570 against $325,156,416 for the previous period.

Viewing the News from

The ECONOMIC SIDE

By JOSEPH STAGG LAWRENCE

Watch Them This Time

IN his special message to Congress on July 19 dealing with the Korean War, the President asked for another $10 billion to place this country in an effective posture of defense against the Reds.

The message also asked for some economic controls and particularly power to allocate scarce materials. The government is not disposed to rely on voluntary action and prefers a club. The record of the recent war as well as the experience of socialist states elsewhere shows that it is not possible for a government to leave an industry partly controlled and partly free. The mandatory allocation of the finished product within a design for defense at once provokes other questions relating to raw materials, fuel, transportation, priorities, labor, and profits.

The appearance of government in the shop or the market place invites an immediate reaction from the public. All the resources of human ingenuity are explored to circumvent regulation. Substitutes are found, and these in turn pose a problem for the regulator which calls for further intervention. Government control is one of the most contagious maladies that can ever afflict a community.

It is for this reason that the Administration will be well advised to go slowly before it turns loose its hordes of itching bureaucrats upon the American economy. There is no desire to prejudice the possibility that the severity of a crisis may leave no alternative to control. Unfortunately, the government service is loaded with eager spirits who welcome emergencies because they afford plausible pretexts for power which the public would not approve under ordinary circumstances. The ambitious dictator, bent upon personal aggrandizement, deliberately creates emergencies to serve his purpose.

The opposition has a clear duty here. It should examine requests for added power with objective detachment. It should distinguish between self-serving bids for dangerous authority and official hysteria on the one hand and, on the other, the authentic dimensions of the crisis and the actual power necessary for the task.

The costly, unjust, and dangerous power aberrations of our central bureaucracy during the last war should be minimized. The issue of Executive Order L-208 is a case in point. This closed all the gold mines in the country on the plea that the production of gold did not contribute to the war effort and the manpower was urgently needed elsewhere.

The diversion of manpower was actually negligible. The mines which closed were flooded with water and have been reopened since the end of the war only at great cost to the owners. It is now known that this order was inspired by a coterie of pro-Communists and Keynesian antigold theorists in the government. None of our allies imposed such closures upon their nationals. Under lend-lease we actually produced and sent gold mining equipment to Russia.

Such bizarre abuse of authority is bound to occur when power is carelessly delegated to the Executive. The high level technicians in the Treasury and the Federal Reserve who find gold a challenging potential threat to their power may not be able to repeat the attempted strangulation of this industry with another L-208. However, there are other minds in Washington with kindred motivation who are looking covetously at steel.

White House Proposal Sets Aside $6 Million for Aluminum

Munitions board won't talk on reactivating reserve plants.

Washington — Defense machinery began grinding faster this week as the White House made its second move toward reopening war plants and taking the reserve fleet out of mothballs.

The White House proposal would set aside $6 million out of requested supplemental funds for the reactivation of aluminum production facilities as insurance against any future shortages.

Industrial Reserve Plants

The Munitions Board had no immediate comment concerning its plans for reopening reserve aluminum plants. There are five standby plants in the industrial reserve: three Alcoa war plants at Burlington, N. J., at Glassmere, Pa., and at Riverbank, Calif.; the Revere Copper & Brass Co. plant at Halethorpe, Md.; and the Aluminum Forgings, Inc., plant at Erie, N. Y.

It was understood that the board's plans included initial reactivation of Alcoa's alloy plant at Burlington and its primary metal plant at Riverbank. Both would require considerable replacement equipment.

An additional $18 million was requested for ship repair which, if granted, would bring the total planned shipyard work to about $25 million, including a previously authorized $7 million. The new funds would be expected to bring a total of 200 reserve ships into active service.

Seeks Synthetic Boost

At the same time, the White House has asked RFC to activate sufficient synthetic rubber plants to bring potential rubber production up to 675,000 tons annually.

Under a previous order, work has already started on reopening three plants. The RFC estimates that to meet the production goal set by the President, it will be necessary to reactivate five of the remaining eight plants.

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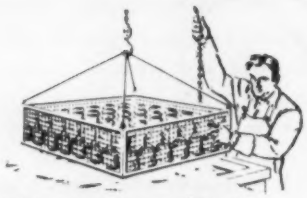

Bright, corrosion-resistant DIP FINISH for zinc

The Unichrome Dip Process – a chemical treatment – brightens zinc plate to chromium-like luster and protects it from dulling. Also used to chromate-treat zinc die castings. It provides both *economy* and *quality* in finishing wire goods, screws, nuts, bolts, and a variety of other products.

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(1) Unichrome S.R.H.S. Chromium offers *higher efficiency*, which enables it to cut plating time 20 to 80%, save power, step-up capacity of existing equipment. (2) It plates *bright* over wider range of current, thus reducing rejects due to the plate "burning" or "missing". (3) It *regulates itself* under normal operating conditions – thereby providing consistently better plating with less supervision.

Chemical-resistant coatings in the heavy-duty class

Unichrome Plastisol and Organosol Compounds, "4000 Series," possess a set of properties seldom found in one material. (1) They have the greater resistance of the vinyls to chemicals, oils, water. (2) This resistance is further increased by the thick coatings – up to 3/16" – that they produce. (3) And because they have flexibility, they withstand mechanical damage as well. (4) They are applied by dipping or spraying, and then baked.

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Construction Contracts For Texas Illinois Pipeline Awarded

Chicago — Construction contracts with four companies have been negotiated by the Texas Illinois Natural Gas Pipeline Co., Chicago, to build its $120 million 1331-mile natural gas pipeline from the lower Texas Gulf coast to the Chicago metropolitan region, announces Joseph J. Hedrick, president.

Contract awards went to Midwestern Constructors, Inc., Tulsa, Okla.; Bochtel Corp., San Francisco; H. C. Price Co., Bartlesville, Okla.; and Fish Pipeline Construction Corp., Houston, Tex.

The pipeline will be built by Midwestern, Price and Bechtel, while the Fish Pipeline Corp. will build compressor stations. Texas Illinois' Federal Power Commission certificate requires that construction start by Aug. 15 and end by the close of 1951. It approved an initial daily capacity of 305 million cu ft daily.

Mark V. Burlingame, vice-president of Texas Illinois, is in charge of operations.

Machine Tool Index at 126.2

Cleveland — Preliminary index of new orders for machine tools in June rose to a 3 year high of 126.2, National Machine Tool Builders Assn. reported here.

Preliminary index of June shipments was 90.4, highest since December, 1948, and the ratio of unfilled orders to shipments at the end of June was 5.1 to 1 as compared to 5.2 to 1 at the end of May.

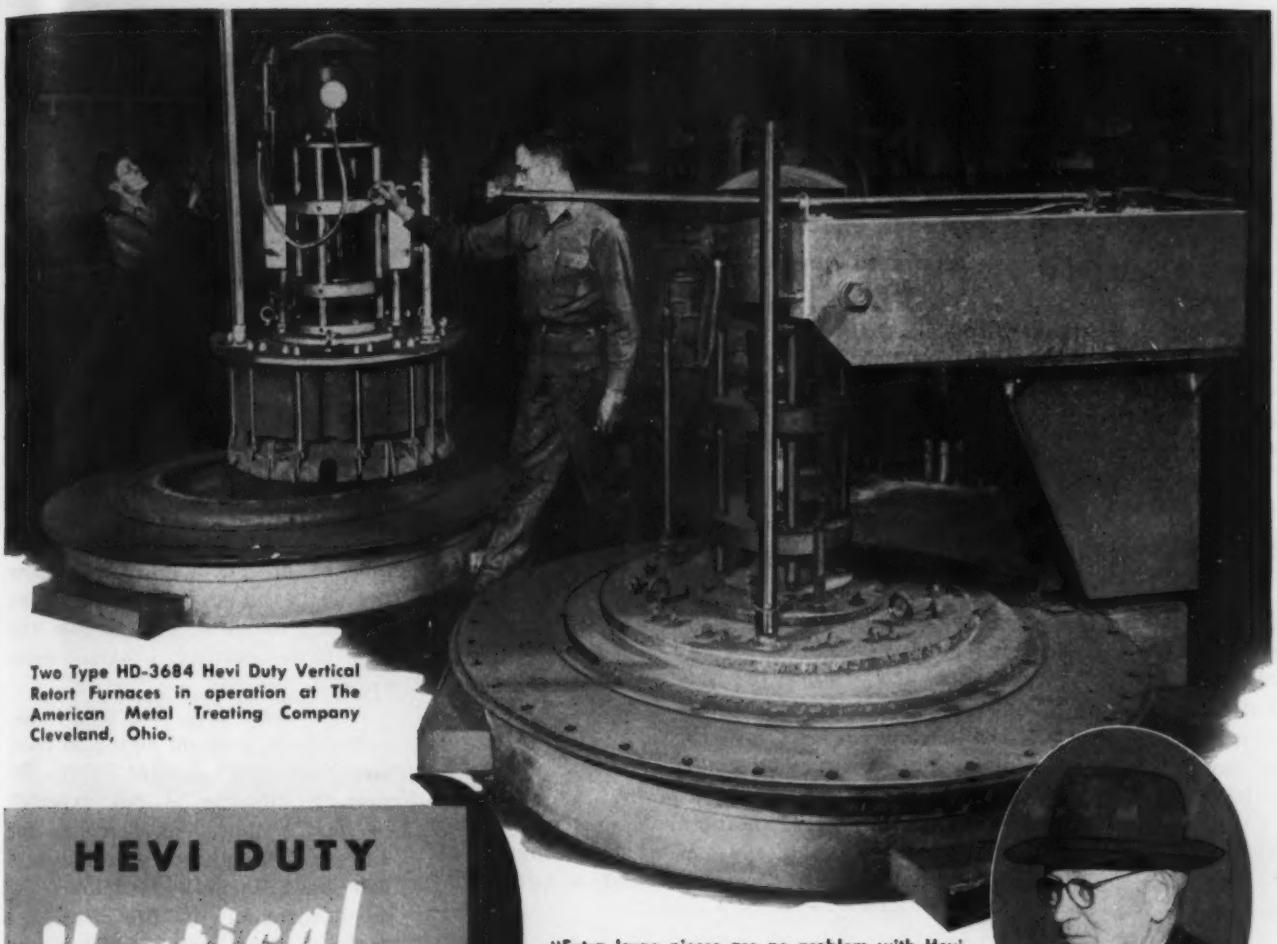
June Iron & Steel Production by Districts

As Reported to American Iron & Steel Institute

BLAST FURNACE CAPACITY AND PRODUCTION —NET TONS	Number of Companies	Annual Blast Furnace Capacity	PRODUCTION							
			PIG IRON		FERRO-MANGANESE AND SPIEGEL		TOTAL			
									Pct of Capacity	
			June	1950 to Date	June	1950 to Date	June	1950 to Date	June	1950 to Date
Distribution by Districts:										
Eastern	12	13,353,580	1,077,883	5,903,852	29,881	157,400	1,107,764	6,061,252	100.8	91.5
Pitts.-Youngstn.	16	26,735,520	2,069,622	11,520,472	22,168	117,764	2,091,790	11,638,236	95.1	87.7
Cleve.-Detroit	6	7,044,600	582,782	3,388,410			582,782	3,388,410	100.5	96.9
Chicago	7	15,897,190	1,173,198	6,463,608			1,173,198	6,463,608	89.7	81.9
Southern	8	5,141,250	425,249	2,351,400	10,890	51,280	436,139	2,402,680	103.1	94.2
Western	4	3,325,400	241,778	1,179,253			241,778	1,179,253	88.4	71.5
Total	38	71,497,540	5,570,512	30,806,995	62,939	326,444	5,633,451	31,133,439	95.8	87.8

STEEL CAPACITY AND PRODUCTION —NET TONS	Number of Companies	Annual Steel Capacity	PRODUCTION							
			TOTAL STEEL				Alloy Steel* (Incl. under total steel)		Carbon Ingots-Hot Topped (Incl. under total steel)	
					Pct of Capacity					
			June	1950 to Date	June	1950 to Date	June	1950 to Date	June	1950 to Date
Distribution by Districts:										
Eastern	25	19,875,460	1,558,593	9,040,718	95.4	91.7	101,352	590,574	278,161	1,629,500
Pitts.-Youngstn.	34	39,145,920	3,189,172	18,284,040	99.0	94.1	396,870	2,313,637	337,124	1,933,188
Cleve.-Detroit	8	9,333,460	780,671	4,635,832	101.7	100.1	42,588	254,207	111,129	645,668
Chicago	15	20,777,520	1,750,588	10,299,069	102.4	99.9	138,581	784,327	238,538	1,435,245
Southern	8	4,560,820	400,444	2,315,455	106.7	102.3	3,557	27,353	6,304	32,353
Western	11	5,699,620	451,077	2,531,610	96.2	89.5	10,177	45,681	5,870	42,366
Total	80	99,392,800	8,131,515	47,106,727	99.4	95.5	693,123	4,015,779	975,124	5,718,321

* For the purpose of this report, alloy steel includes stainless and any other steel containing one or more of the following elements in the designated amounts: Manganese in excess of 1.65%, and Silicon in excess of 0.60%, and Copper in excess of 0.60%. It also includes steel containing the following elements in any amount specified or known to have been added to obtain a desired alloying effect: Aluminum, Chromium, Cobalt, Columbium, Molybdenum, Nickel, Titanium, Tungsten, Vanadium, Zirconium, and other alloying elements.



Two Type HD-3684 Hevi Duty Vertical Retort Furnaces in operation at The American Metal Treating Company Cleveland, Ohio.

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THIS is a typical example of how one of Cleveland's long-established heat treaters found that Hevi Duty Furnaces provide for flexible operation which helps meet the demands of exacting customers. Consistent, uniform results are possible because Hevi Duty Vertical Retort Furnaces are designed for multiple zone temperature control and rapid circulation of the furnace atmosphere.

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Gray Iron Foundry Orders Spur Production

Inventory buying may make 1950 an 11-million ton year . . . Fear of coming shortages, allocations and pig iron price rises are powerful stimulants to buying—*By Bill Lloyd.*

Cleveland — An 11-million ton year, one of the largest peacetime tonnages in the history of the gray iron foundry industry, is shaping up as a result of a "tremendous upsurge" of buying during the past 60 days.

Inventory Buying

Chief cause is inventory buying. Buyers believe they won't be able to buy gray iron castings any cheaper in the future and are building up some inventory. This is a rather sound position in view of raw pig iron price increases by some producers last week.

Underlying inventory buying are shortage fears of a nation facing a big defense job, and perhaps major war allocations.

On the other hand, the gray iron castings business was picking up before the crisis in Korea developed. With the automotive, truck and farm implement producers either breaking records or doing very well, foundries were bound to feel the effect.

In addition, certain seasonal factors, including demand from stove, furnace and heating appliance producers, can be expected to develop further.

As a result, most gray iron foundries are melting currently at the highest rate in their history. Many are operating at more than 100 pct of their maximum commercial demand, a figure obtained by taking the average of the best 6 consecutive months since the end of World War II. On an industry-wide basis, operations were at 79 pct in May and June operations over 80 pct.

Currently the industry has no problems of manpower, or raw materials. Merchant iron and good scrap are in relatively easy supply in most areas.

Able to Meet Crisis

Prices are firm. Generally the industry is still short of recovering the profit margins of 18 months ago because of an interim period in the spring of 1949, when foundry demand was at low ebb and price cutting became widespread.

Spokesmen feel the gray iron industry is in good shape to meet any national crisis. But the present upsurge is not expected to lend a new lease on life for marginal foundries, whose future has been largely foreclosed by mechanization of the war and early postwar years. Fluctuations in the foundry business in the past 18 months have throttled further mechanization to some extent.

Ductile Gray Iron

Ace in the hole for many foundries may be ductile iron, development of which would be spurred by a major defense program or a war, according to industry spokesmen. Ductile gray iron is believed to have a terrific war potential, particularly in a period of scarcity of mild steel.

While experts early this year estimated the gray iron industry would do well to reach 10 million tons in 1950, the industry this week was moving at an 11-million tons plus pace, and reaching "for new high ground."

A. M. Castle Profits Rise

Chicago — A. M. Castle & Co., steel distributors, announced profits of $439,868 for the first 6 months of the year. During the first half of 1949 profits came to $311,080.

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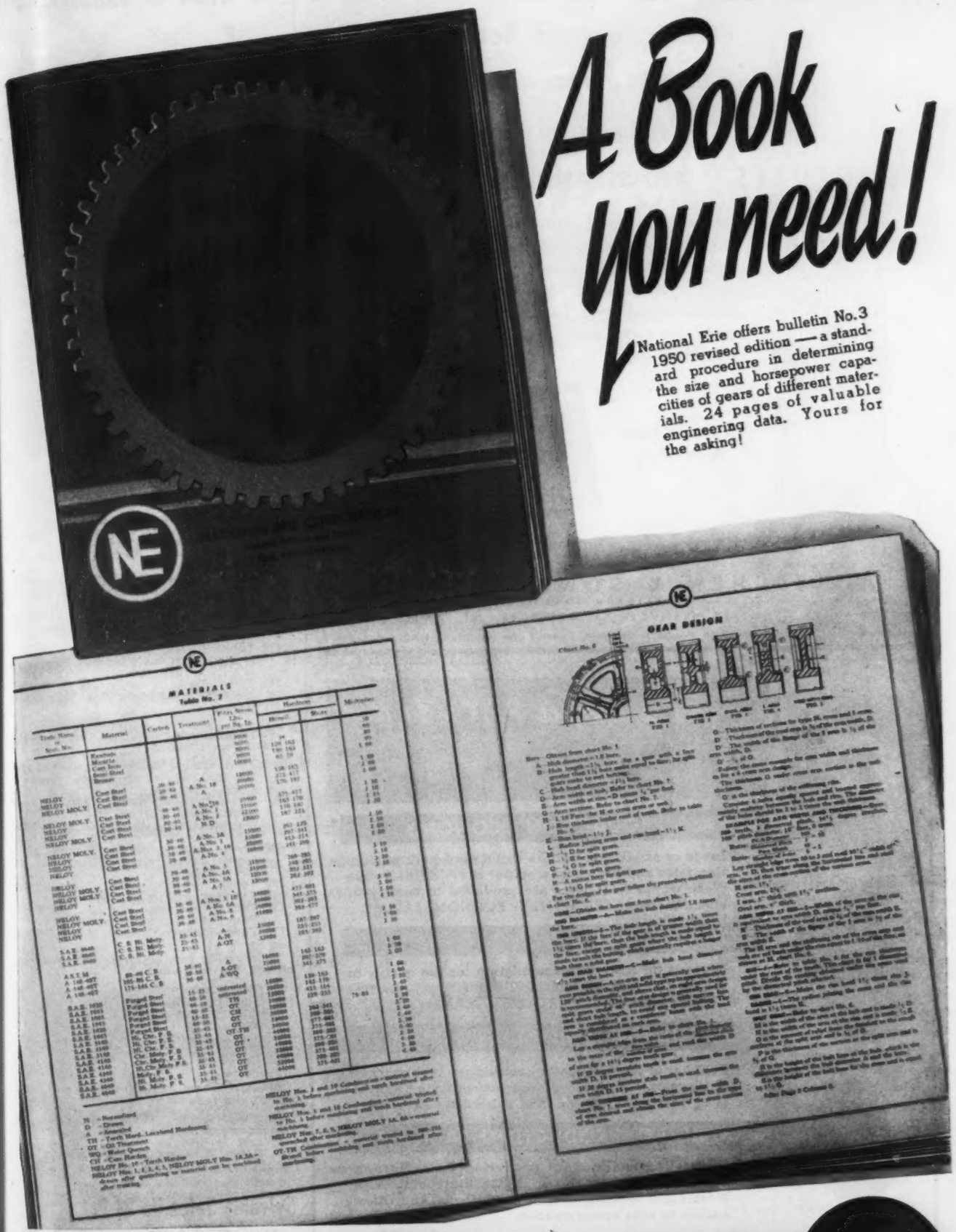
National Erie offers bulletin No. 3 1950 revised edition — a standard procedure in determining the size and horsepower capacities of gears of different materials. 24 pages of valuable engineering data. Yours for the asking!



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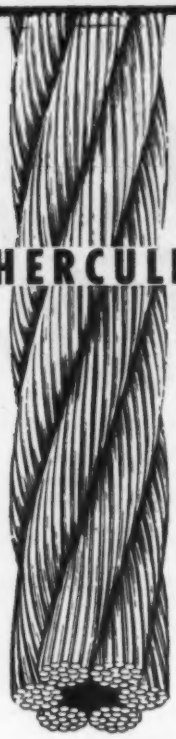

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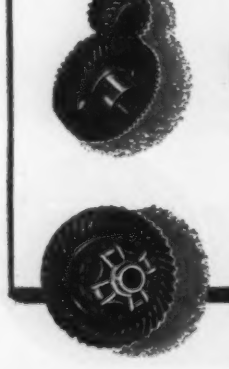

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FAIRFIELD MANUFACTURING CO.

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STEEL CONSTRUCTION NEWS

Fabricated steel awards this week included the following:

500 Tons, Townshend, Vt., 4 span I beam bridge. W. H. Morse Construction and Lumber Co., Inc., Bennington, Vt., low bidder. R. J. Maynes, Brattleboro, Vt., district highway engineer. Completion date is July 15, 1951.

385 Tons, Queens, New York, apartment house, to Grand Iron Works.

355 Tons, Plymouth, Mass., bituminous macadam and nine bridges, through M. DeMatteo Construction Co., Quincy, Mass., to Groisser and Shlager Iron Works, Somerville, Mass. Lewis R. Sellow, Middleboro, district engineer. Completion date June 1, 1951.

350 Tons, Boston, Mass., new steel frame building for Salvation Army, through McCutcheon Co. to Groisser and Shlager Iron Works, Somerville, Mass.

350 Tons, St. Paul, Minn., building addition for American Hoist and Derrick Co., to Bethlehem Steel Corp.

310 Tons, Marathon County, Wis., bridge project S-011/2/, to Wausau Iron Works, Wausau, Wis.

170 Tons, Stevenson County, Ill., bridge section 27-B, to Shappert Engineering Co., contractor.

110 Tons, Dana County, Wis., bridge project FO4-2/23/, to American Bridge Co.

Fabricated steel inquiries this week included the following:

1605 Tons, Acton, Boxboro, Littleton and Harvard, Mass., bituminous concrete and 12 bridges.

1350 Tons, Trenton, Nebr., Chicago, Burlington and Quincy Relocation Bureau of Reclamation Spec. 3113. Bids taken Aug. 8.

406 Tons, Adams, Mass., 2 span plate girder bridge and single span on Grove St.

250 Tons, Newton, Iowa, high school. Bids taken July 28.

150 Tons, Green Bay, Wis., St. Peter and Paul School. Bids taken Aug. 3.

110 Tons, Jackson County, Nebr., bridge.

Reinforcing bar inquiries this week included the following:

654 Tons, Acton, Boxboro, Littleton and Harvard, Mass., bituminous concrete and 12 bridges. Relocation of U. S. Route 2.

107 Tons, Adams, Mass., 2 span plate girder bridge and single span on Grove St.

Steel sheeting inquiries this week included the following:

150 Tons, Acton, Boxboro, Littleton, and Harvard, Mass., bituminous concrete and 12 bridges. Relocation of U. S. Route 2 (route between Boston and Albany, N. Y., via Mohawk Trail).

Sylvania Sales Up 23 Pct

New York—Net sales of Sylvania Electric Products, Inc. for the 6 months ending June 30 were $61,086,101, a 23 pct increase over sales during the first half of last year, it was reported.

Any ONE Of These 10 Advantages Will Pay For Your Fence

MADE OF *KONIK STEEL

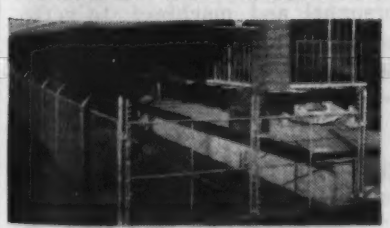
- Lasting Protection Against Theft, Vandalism
- Reduced Fire Risk, Lower Insurance Rates
- Better Appearance, Higher Property Value
- Increased Production, Better Inventory Control
- Reduced Expense in Guarding Property
- Increased Outdoor Storage Space
- Reduced Accident Incidence and Liability
- Increased Order and System
- Controlled Entrance and Exit on Property
- Greater Security, Peace of Mind

*CONTINENTAL *Chain Link* FENCE IS THE ONLY FENCE MADE OF *KONIK STEEL

No other fence provides such long-lasting day-and-night protection at such low cost per year of fence life. Continental Chain Link pays for itself with years of "care-free" service because it is made of KONIK steel—an open hearth alloy steel containing copper, nickel and chromium. These elements provide greater strength . . . extra resistance to rust and corrosion. They make Continental fence rugged and unyielding. If you want to know more about the fence that lasts for years and years, send for your free copy of "Planned Protection"—a complete manual on modern protection and control of property. Write Continental at Kokomo, Indiana, or contact our nearest sales office.

* TR. MRKS. REG. U.S. PAT. OFF.

SHARE IN THESE EXTRA SERVICES



ENGINEERED FOR PROTECTION

Continental fence has 14 distinctive construction features including heavier line posts . . . stronger, smoother-working gates . . . improved pivot-type hinges . . . self-locking barb arms . . . full gage wire of KONIK steel . . . 20% more ties.

TAILORED TO FIT YOUR PROPERTY

Experienced fence engineers plan and help erect Continental Chain Link fence. They work with you, laying out the most effective and economical installation to harmonize with the character of your property.

CONTINENTAL STEEL

CONTINENTAL STEEL CORPORATION

GENERAL OFFICES • KOKOMO, INDIANA

PRODUCERS OF *Manufacturer's Wire* in many sizes, shapes, tempers and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, Lead Coated, and special wire. ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.

keeps automatics well-fed...

FOLLANSBEE COLD ROLLED STRIP provides a continuous supply of uniform steel feeding from coils right into your automatics—regardless of the forming operation involved. Follansbee Cold Rolled Strip is a productioneer's tool. This Follansbee Specialty Steel in coils offers many time-saving advantages.

making furniture of fashion

FOLLANSBEE COLD ROLLED STRIP is a custom-made steel suitable for furniture manufacturing and a myriad other uses. Follansbee Cold Rolled Strip in coils is available in tempers and finishes for most industrial cold rolled steel requirements. Follansbee Cold Rolled Strip and Follansbee Polished Blue Strip are furnished in continuous coils to your specifications. You should be taking advantage of the custom-service on Follansbee Specialty Steels—call the Follansbee Representative nearby.

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COLD ROLLED STRIP • ELECTRICAL SHEETS • POLISHED BLUE SHEETS
SEAMLESS TERNE ROLL ROOFING
Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. *Sales Agents*—Chicago, Indianapolis, St. Louis, Kansas City, Nashville, Houston, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada. *Plants*—Follansbee, W. Va.
Follansbee Metal Warehouses—Pittsburgh, Pa., Rochester, N. Y., and Fairfield, Conn.

FREE

PUBLICATIONS

Continued from Page 36

component machine parts everywhere. Listed are over 100 product groups, including spur, miter, double and worm gears, roller chain, sprockets, radiomotors, ball bearings, couplings and pulleys; over 4500 stock items. A number of important new products appear for the first time in this latest edition. *Boston Gear Works.*

For free copy insert No. 8 on postcard, p. 37.

Electrons at Work

IBM's pioneering research and development in the application of the science of electronics to computing machines is described in an interesting new 16-p. catalog. The basic theory of electronics and calculating is presented along with information on other electronic applications. The booklet clearly explains how an electronic tube works. *International Business Machines Corp.*

For free copy insert No. 9 on postcard, p. 37.

Splines, Special Gages

A new 4-p. brochure gives, at a glance, a quick picture of a few of the splines and special gages produced by Dale craftsmen. The folder briefly describes how this manufacturer is equipped, in both personnel and machines, to serve the most exacting requirements. *Dale Corp.*

For free copy insert No. 10 on postcard, p. 37.

Carbide Grade Chart

More and more manufacturers have been exercising the privilege of specifying carbide grade equivalents, so a new chart was devised to facilitate this policy. The chart contains recommendations of nine principal carbide manufacturers for various types of chip removal applications, wear and impact applications. *Wendt-Sonis Co.*

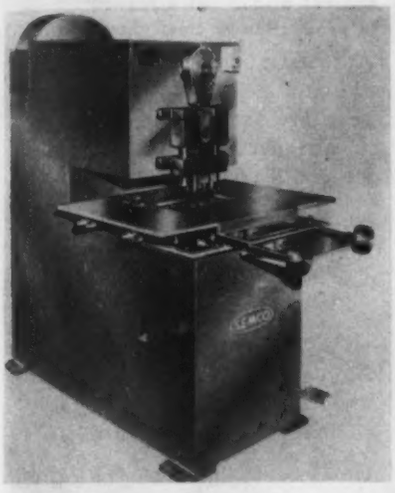
For free copy insert No. 11 on postcard, p. 37.

Resume Your Reading on Page 37

NEW PRODUCTION IDEAS

Continued from Page 40

of punched work is positive because punching is controlled by template. The operator guides the punching with two hand knobs. The press has throat depth of 20 in. with



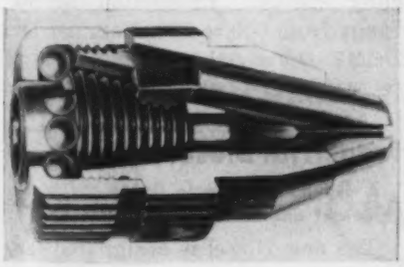
4¾ in. clearance. Stroke is 1½ in. Power is provided by a 1 hp precision motor. *Service Machine Co.*

For more data insert No. 26 on postcard, p. 37.

Keyless Drill Chuck

Machining action centers the tool and tightens the grip.

Self-tightening and self-centering with a high degree of accuracy and rigidity are features of a new



hand operated keyless ball bearing drill chuck. Its design consists of a cone shaped screw directly actuating three gripping jaws. The jaws are keyed in the body; the screw does not take the jaw torsional strain. The large ball bear-

The ABC of MST

Michigan
The Modern Electric Resistance
WELDED STEEL TUBING

A ALWAYS MAKES POSSIBLE
B ETTER PRODUCTS
C AT LOWER OST

A Quality Product

Standard Sizes

Tube Diameter O.D. Size	Maximum Wall BWG Decimal	Maximum Wall BWG Gauge	Minimum Wall BWG Decimal	Minimum Wall BWG Gauge
⅛	.049	16	.028	22
¼	.065	14	.022	24
⅜	.083	13	.022	24
½	.095	13	.022	24
⅝	.095	13	.022	24
¾	.095	13	.028	22
⅞	.095	13	.028	22
1	.095	13	.028	22
1⅛	.095	13	.028	20
1¼	.095	13	.035	20
1⅜	.095	11	.035	20
1½	.120	11	.035	20
1⅝	.120	11	.035	20
1¾	.120	9	.035	20
1⅞	.148	9	.035	20
2	.148	9	.035	20
2⅛	.148	11	.035	20
2¼	.120	9	.035	20
2⅜	.148	11	.035	18
2½	.120	9	.049	18
2⅝	.148	9	.049	18
2¾	.148	9	.049	18
2⅞	.148	9	.049	18
3	.148	9	.049	18
3⅛	.148	9	.049	16
3¼	.148	9	.065	16
3⅜	.148	9	.065	16
3½	.148	9	.065	16
3⅝	.148	9	.065	
3¾	.148	9		
3⅞	.148			
4				

Can be Bent ... FLANGED, EXPANDED, TAPERED, DEPRESS BEADED, EXPAND BEADED, ROLLED, EXTERNAL UPSET, INTERNAL UPSET, FLUTED, SPUN CLOSED, FORGED, BEVEL FLANGED, FLATTENED, SWAGED

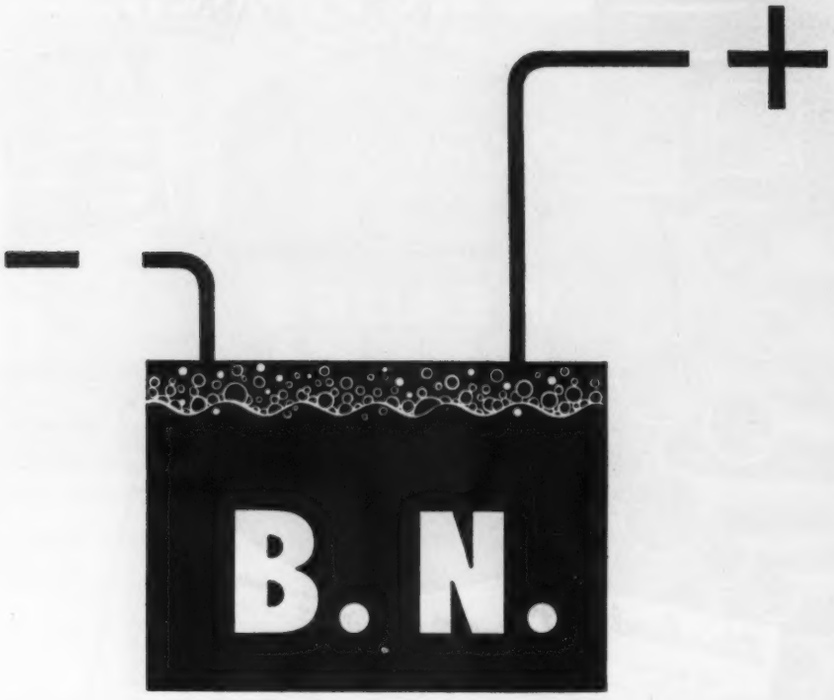
ROUND
⅜" to 4" O.D. 9 to 22 gauge
SQUARE-RECTANGULAR
½" to 2" 20 gauge 1" to 2¾", 14, 16, 18 gauge

Consult us for engineering and technical help in the selection of tubing best suited to your needs.

Michigan STEEL TUBE PRODUCTS CO.

33 Years in the Business
9450 BUFFALO STREET • DETROIT 12, MICHIGAN
FACTORIES: DETROIT, MICHIGAN • SHELBY, OHIO

DISTRIBUTORS: Steel Sales Corp., Detroit, Chicago, St. Louis, Milwaukee, Indianapolis and Minneapolis—Miller Steel Co., Inc., Hillside, N. J.—O. L. Hyland, Dayton, Ohio—Dirks & Company, Portland, Oregon—James J. Shannon, Milton, Mass.—Service Steel Co., Los Angeles, Calif.—American Tubular & Steel Products Co., Pittsburgh, Pa.—Strong, Carlisle & Hammond Co., Cleveland, Ohio—A. J. Fitzgibbons Co., Buffalo, N. Y.



. . . prepares nickel for chromium

Have you tried Wyandotte B.N.? Steadily increasing sales vouch for its performance. It's used in the preparation of nickel-plated parts for chromium plating. It does a job on bright nickel and on buffed dull or buffed semi-bright.

An excellent conductor, B.N. properly activates the nickel surface in direct electrocleaning.

B.N. wets rapidly, removes all traces of buffing compounds, lint, shop dirt and fingerprints. It has long life . . . rinses freely, eliminates clouded plate. It is dependable under a wide range of operating conditions.

For the full facts on B.N., write us.

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN
SERVICE REPRESENTATIVES IN 88 CITIES

Wyandotte
REG. U. S. PAT. OFF.

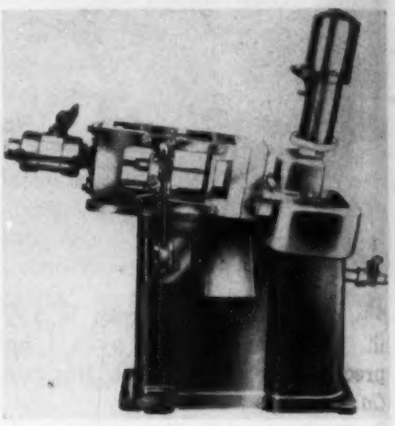
ing thrust with self-centering construction assures accuracy and gripping power under heavy loads and guarantees ease in releasing the grip. Four sizes have chuck capacity ranging from 0 to ⅝ in. All types are stocked to fit any tapered or threaded spindle. *Ettco Tool Co., Inc.*

For more data insert No. 27 on postcard, p. 37.

Diecasting Machine

Savings of 500 pct achieved in production of small parts.

Automatic injection of molten metal and automatic opening and closing are features of a new low cost air-operated diecasting machine. This machine was designed



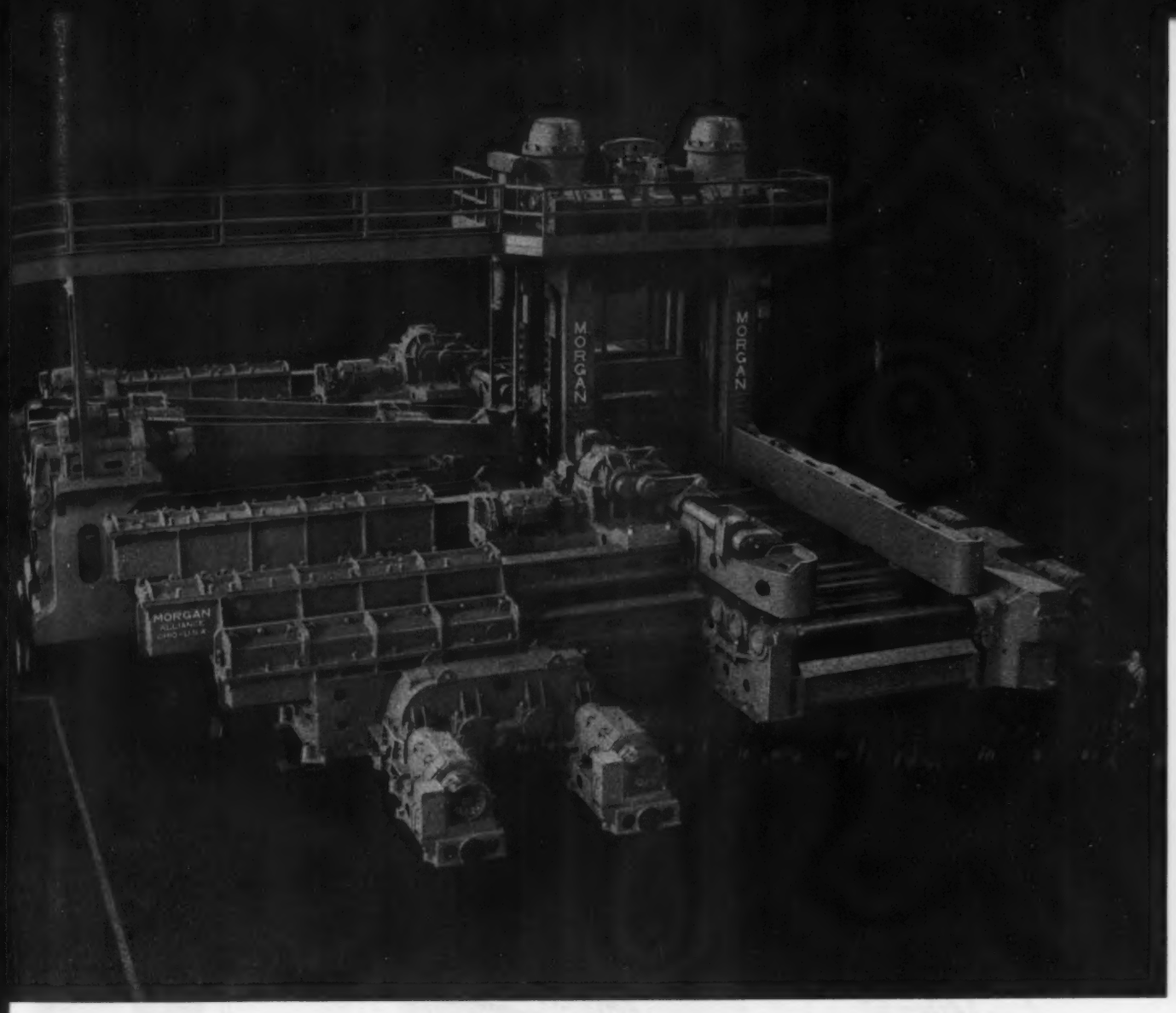
to enable manufacturers to die cast small parts in their own shops, effecting savings said to reach 400 to 500 pct. The machine can take jobs up to 1-lb capacity. It utilizes die blocks up to 2½ in. thick and as large as 9 x 9 in. It has the advantage of fast chill and high cycling speeds. Production speeds range from 600 to 800 shots per hr. *DCMT Die Casting Machine Corp.*

For more data insert No. 28 on postcard, p. 37.

Industrial Diesel

A 6-cylinder 2-cycle lightweight engine is rated at 275 hp.

The new Diesel is designated the 110 because of its 110 cu in. displacement per cylinder. The horsepower rating of 275 at 1800 rpm is attained with a b.m.e.p. of 92 psi. Bore is 5 in. and stroke, 5.6 in. Features include blower scavenging with a new gear-driven centrifugal blower furnishing more air



44" TWIN MOTOR DRIVE BLOOMING MILL

Morgan 44"—2 High Reversing Blooming Mill to be direct connected to two 4000-Hp., 50/120 Rpm. Motors. Top roll and both spindles are hydraulically balanced by individual cylinders connected to an air hydraulic system. Speeds of motor driven screw down, feed rollers, mill tables and manipulator are regulated by variable voltage control.

Mill tables have box type cast steel girders. Rollers are forged steel equipped with anti-friction type bearing cartridges. All gears have hardened teeth, are totally enclosed and operate in oil. Manipulator is of the electric overhead type with retractable heads affording maximum accessibility to all parts of the mill tables.

lesign and build mills and mill machinery for the steel
stry. For your next mill and equipment, consult—

MORGAN Engineering

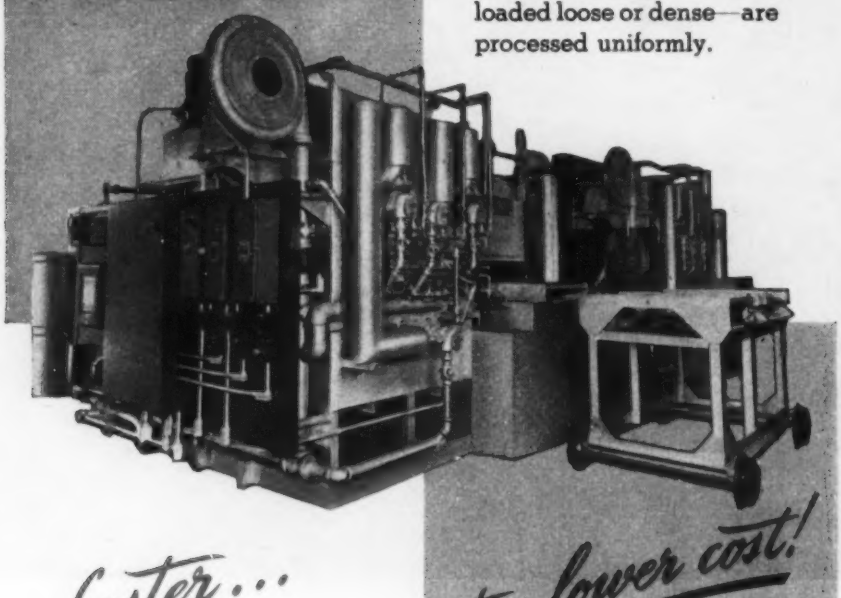
E MORGAN ENGINEERING CO.
LIANCE, OHIO PITTSBURGH—1420 OLIVER BUILDING

DESIGNERS • MANUFACTURERS • CONTRACTORS • BLOOMING MILLS • PLATE MILLS
STRUCTURAL MILLS • ELECTRIC TRAVELING CRANES • CHARGING MACHINES • INGOT STRIPPING
MACHINES • SOAKING PIT CRANES • ELECTRIC WELDED FABRICATION • LADLE CRANES • STEAM
HAMMERS • STEAM HYDRAULIC FORGING PRESSES • SPECIAL MACHINERY FOR STEEL MILLS

...BLAZING THE HEAT-TREAT TRAIL...

New Production-line Holcroft batch-type furnace

This compact heat-treat furnace has a vestibule, heating chamber, quenching tank—all above floor level and in one unit.



does more jobs...

You'll be able to handle a wide variety of jobs at temperatures ranging from 400° to 1700° F., and get clean, scale-free work. All contamination is removed by a high flow of generator gas in the vestibule. The furnace fan circulates atmosphere so that parts—loaded loose or dense—are processed uniformly.

faster...

The furnace can be operated automatically, or manually, by push-button controls. To save time, the temperature is built up between cycles to a point higher than necessary; then the normal operating temperature control is resumed after the cool parts enter the furnace. The quench tank handles the full load in one operation.

at a lower cost!

The furnace requires minimum floor space, no pit for the quenching tank. It can be moved easily—as a unit—to any part of the production line. Trays last longer because they are carried—*not* pushed or pulled while hot.

Want more information? Write us today!

SINCE 1916 Holcroft AND COMPANY

BUILT BY HOLCROFT & COMPANY DETROIT-MICH.

PRODUCTION HEAT TREAT FURNACES FOR EVERY PURPOSE

6545 EPWORTH BLVD. DETROIT 10, MICHIGAN

CHICAGO 9 — C. H. Martin, A. A. Engelhardt, 4209 South Western Blvd.
CLEVELAND 2 — Wallace F. Schott, 6516 Detroit St.
HOUSTON 1 — R. E. McArdle, 5724 Navigation Blvd.
CANADA — Walker Metal Products, Ltd., Windsor, Ontario
EUROPE — S. O. F. I. M., Paris 8, France

Continued

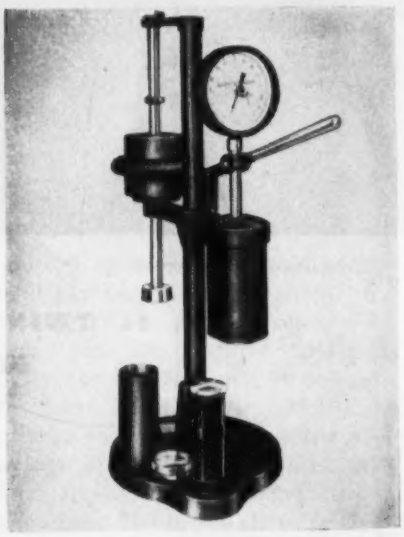
for the cylinders than is needed for combustion. GM unit injectors pump, meter and atomize the fuel, and are easily removed for inspection or exchange. Wearing parts such as cylinder liners, bearings, valve guides and inserts are precision parts and readily replaceable. The 110 is offered (1) as a bare engine, (2) with full equipment for marine or industrial use or (3) with special accessory arrangements for a variety of end products. *Detroit Diesel Engine Div. General Motors Corp. (This item corrects typographical errors which appeared in July 13 issue.)*

For more data insert No. 29 on postcard, p. 37.

Foundry Sand Tester

Measures bonding property of molding sand by compression test.

The preparation of sand specimens for compression testing and the testing of the compression



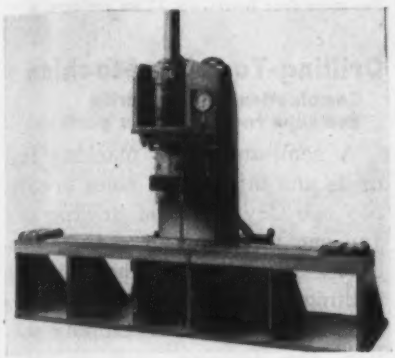
strength of the specimens is combined in a new instrument known as the Gordon-Campbell combination rammer-compression tester. The instrument offers a simple way to prepare the specimen and obtain dependable results in the determination of its compressive strength. Pressure is gradually applied by hand until the specimen collapses. The maximum pressure in pounds per square inch is indicated by the free pointer on the gage. *Claud S. Gordon Co.*

For more data insert No. 30 on postcard, p. 37.

Straightening Press

Hydraulic, open-gap press has 13-in. diam ram with 12-in. stroke.

The 100-ton press stands 10 ft high and occupies floor space 4 ft 2 in. x 12 ft 4 in. The working table, measuring 22¼ in. x 12 ft. 4 in. with 26½ in. daylight between it and ram head face, has



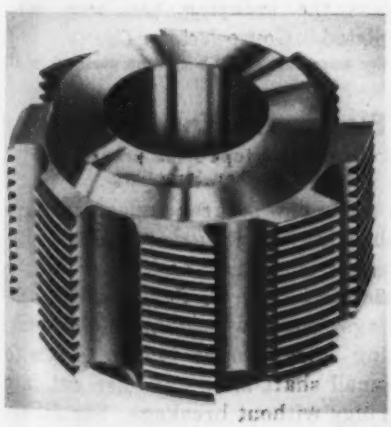
two bases in machined grooves for the assembly of disks or anvil blocks. Bases move in increments of 6 in., any required distance either side of center. Hydraulic power is supplied by a two-pressure pumping unit and motor. Press control is through a four-way lever-operated piston-type valve. *R. D. Wood Co*

For more data insert No. 31 on postcard, p. 37.

Fine Pitch Hobs

Provide high production precision tooling for making small gears.

Availability of a complete assortment of fine pitch hobs has been announced for manufacturing small gears to be used in instru-



ments, timers and small mechanisms of all types. Fine pitch hobs are used to cut 20 DP gears and finer. To facilitate inspection problems, a Toolgraph Chart is shipped with every Illinois fine

Want better blast cleaning?

...try long-lasting "CERTIFIED" ABRASIVES in your cleaning room

If you want better blast cleaning, switch to Certified, the high-quality abrasive. Certified's Samson Shot and Angular Grit are modern abrasives, produced by a special, automatically-controlled hardening process that makes each abrasive particle a homogenous mass. Thus Certified wears slowly, can be used over and over again.

With Certified in your plant, castings are cleaned in a jiffy. Scale, rust and dirt disappear completely, giving you more efficient blast cleaning. Find out for yourself how Certified's higher quality pays off in the cleaning room. Order Certified Abrasives today and get better blast cleaning!

Experienced Foundrymen say:

"Always specify Certified"

Accepted and used for over 55 years

PITTSBURGH CRUSHED STEEL CO.
PITTSBURGH, PENNA.

STEEL SHOT AND GRIT CO.
BOSTON, MASS.

SHENANGO-PENN *Centrifugal* CASTINGS ... KEY TO SAVINGS

Bronze cylinder centrifugally cast and precision finished to specification by Shenango-Penn for use in manufacture of corrugated paper.

Major parts last longer ... cost less!

TAKE this special bronze forming roll cover, for example. Because it is a Shenango-Penn *centrifugal* casting, it combines complete uniformity, exceptionally fine, pressure-dense grain, and freedom from blow holes, sand inclusions and other common, often hidden defects.

The money-saving result, quite naturally, is greatly prolonged wear life and the plus strength that will take abnormal loads and speeds without risking costly failure in service.

This is just one of the countless types of cylinders, sleeves, liners, rings, rolls and roll assemblies produced by Shenango-Penn in ferrous and non-ferrous metals for various industries. When *you* need such parts . . . rough, semi-machined or precision finished, small or large . . . specify Shenango-Penn and profit by Shenango-Penn's specialized processes, facilities and experience.

MEANWHILE, ASK FOR BULLETIN

No. 143—Centrifugal castings of non-ferrous metals and alloys.

No. 144—Centrifugal and static castings of plain and alloyed irons.

No. 145—Centrifugally cast bushing stock in all standard sizes.

SHENANGO-PENN MOLD COMPANY
582 West Third Street Dover, Ohio
Executive Offices: Pittsburgh, Pa.

SHENANGO PENN

All Bronzes • Monel Metal • Ni-Resist • Mechanite Metal®

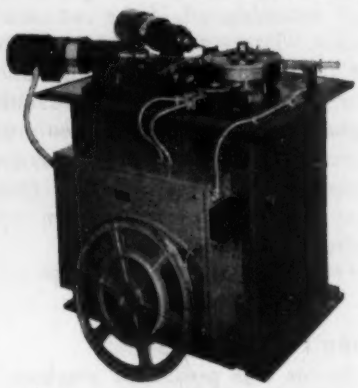
pitch hob. It is an easily-read, individual graph of the actual variation in the lead of each hob, thus eliminating the need for difficult fine pitch hob lead inspection in the hob user's plant. *Illinois Tool Works.*

For more data insert No. 32 on postcard, p. 37.

Drilling-Tapping Machine

Combination machine drills and taps radial holes in parts.

A semi-automatic machine that drills and taps radial holes in parts has one Govro-Nelson drilling unit and one tapping unit. As the operator hand-indexes the part, the drilling unit starts and when the first hole drilled is in tapping position the tapping unit operates. From then on drilling and tapping



units operate simultaneously. The machine is so interlocked that the operator cannot index the part until both spindles are out of the work; the units cannot operate unless the indexing has been completed. *Govro-Nelson Co.*

For more data insert No. 33 on postcard, p. 37.

Plastic Packing

Vulcanized tape-back prevents breakage when installing.

The new securely-vulcanized tape backing gives greater flexibility, extra economies, and easier identification of Super Seal plastic packings. The new backing allows packing spirals to be twisted down to small shaft sizes and then cut into rings without breakage. Six different styles of John Crane Super Seal packings are composed of asbestos, anti-frictional metal particles, flake graphite, and special binders. *Crane Packing Co.*

For more data insert No. 34 on postcard, p. 37.

Resume Your Reading on Page 41

MARKET

Briefs and Bulletins

security spending—President Truman asked Congress this week to vote a new $4 billion worth of defense for non-communist Europe. Appropriations committees of Congress gave the proposal a high priority on their lists of spending requests for defense. Senate and House leaders predicted the full amount, "or close to it," would be approved soon. The new request brings to slightly over $6 billion the total sum requested for arming western European and other non-communist nations during the past 2 years.

touch-and-go—Obtaining enough freight cars is a touch and go matter for steel producers. They never know from one day to the next whether they are going to get enough cars. So far the shortage has not caused any pileups of steel. One producer needed 30 cars, but only 2 were available. After arranging for trucks to fill the breach, enough cars were finally obtained.

freight cars—At a special meeting called in Chicago last week by Assn. of American Railroads, top rail officials approved a program calling for construction of about 122,000 freight cars. They would cost about $675 million and would require about 2.8 million tons of steel. They hope car output will increase to 10,000 per month by January.

caution—Some steel producers are qualifying their commitments for delivery with the phrase "subject to restrictions which may be imposed." Others are being cautious about making any commitments for fourth quarter and may postpone the opening of order books for that period.

place car orders—Orders for freight and passenger cars costing more than $6 million have been placed by the Canadian National Railways, reports E. A. Bromley, vice-president.

foreign pig price—The price of foreign pig iron has inched up to $42.00 c.i.f. eastern ports for foundry grade. With rail charges to delivery points, there is still a margin of $4 to $5 a ton for certain consumers.

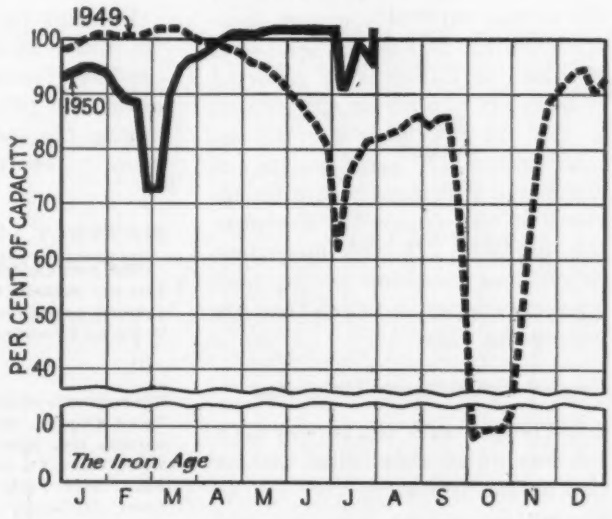
business record—Pittsburgh district business rose to record levels, reports the Bureau of Business Research. University of Pittsburgh. The index rose from 190.8 pct of the 1935-39 average at mid-July to 203.6.

reaction in hardware—Last week THE HARDWARE AGE conducted a telegraphic survey to determine the business outlook for their trade. They found that hardware manufacturers are trying to discourage speculative buying but that many of their customers are ignoring the advice. This has forced voluntary allocations by manufacturers in some lines. Probably the most significant finding was the speed with which both manufacturers and customers reacted to the news in Korea.

full speed ahead—Southern Railway and Louisville and Nashville shops were ordered to go full speed ahead on car repairs. They were put on a 6-day basis for heavy repairs and 7-days for lighter ones. This week the San Francisco Railroad ordered 500 steel boxcars from the Pullman-Standard Car Mfg. Co., Birmingham.

stainless demand up—Stainless steel demand has been climbing rapidly in the last month, ever since rationing of nickel was announced. The business in flat-rolled is so far beyond industry capacity that producers are studying the prospects for voluntary rationing of stainless to customers.

Steel Operations



District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
July 23	102.0*	99.5	91.0	88.0	93.0*	104.0	100.0	104.0	107.0*	105.0	88.0	86.5	115.0	99.5
July 30	103.0	103.0	91.0	90.0	99.0	104.0	101.0	104.0	103.0	103.5	88.0	86.5	125.0	101.0

* Revised.

Nonferrous Metals OUTLOOK

Market Activities

Suspension of copper tariff still up in air . . . Copper market quiet . . . Zinc price holds at 15¢ . . . Bullish factors in lead market . . . Aluminum ingots up ½¢

by JOHN ANTHONY

New York — Prices of metals were held largely unchanged last week, in spite of shortages, the war, and a 2¢ tariff being paid by fabricators for foreign copper. Aluminum ingot prices were an average of ½¢ higher than last week. Some refineries and ingot makers were offering an extra ¼¢ for scrap copper to compete with the brass mill buying price for heavy copper.

There is still the possibility of the copper tariff suspension measure failing to go through. Sen. Milliken of Colorado is reported to be ready to offer an amendment to the bill providing for the establishment of peril points at which the President would be advised of the danger to the mining industry. In the meantime, fabricators continue to buy and consume copper on which they are paying the duty.

Copper Fabricators Hold Bag

Early this week the copper market was quiet, this being the period before producers have opened up for September business, and after virtually all August metal has been disposed of. The major interest of the industry centers around the fight in the Senate Finance Committee over the tariff. Very heavy pressure for passage of suspension legislation was applied by the Administration at the Ways and Means Committee hearings. Yet fabricators may yet find themselves out-of-pocket on copper consumed in the last few weeks.

Demand for zinc continues extraordinarily heavy. But producers have found it possible to hold down the price to the 15¢ level during the last month. Late last week the Joplin concentrates price was continued at $99 a ton, which would indicate that the price might hold for a while longer at least. Most factors are selling largely on an average price basis, which would protect against a sudden advance.

Smelting Charge Down

Lead buying continues very good. Producers say they are selling their intake. But there is no immediate indication of a price advance. On the other hand, the smelting charge has been reduced to $35 a ton, an indication that smelters want to encourage heavier shipments or that a price advance can be expected.

Secondary aluminum ingot business has been very heavy ever since the establishment of allocations for virgin pig and ingot by a primary producer. The active market has had the effect of building up the price. After advances of about ½¢ two weeks ago, last week's business was taken at still another ½¢ rise.

Last week the tin market fluctuated by several cents per lb about the peak level reached early in the week. There was no further push upward, except that at midweek a new high of 97½¢ was reached. Buying has been quiet in the domestic market. Price developments centered around activity in the Singapore and London markets.

MONTHLY AVERAGE PRICES

The average prices of the major nonferrous metals in July based on quotations appearing in THE IRON AGE, were as follows:

	Cents Per Pound
Electrolytic copper, Conn. Valley	22.50
Lake Copper, delivered	22.625
Straits tin, New York	89.881
Zinc, East St. Louis	15.00
Zinc, New York	15.72
Lead, St. Louis	11.46
Lead, New York	11.66

NONFERROUS METALS PRICES

	July 26	July 27	July 28	July 29	July 31	Aug. 1
Copper, electro, Conn.	22.50	22.50	22.50	22.50	22.50	22.50
Copper, Lake, delivered	22.625	22.625	22.625	22.625	22.625	22.625
Tin, Straits, New York	97.50	97.50	94.75	....	95.50	97.00*
Zinc, East St. Louis	15.00	15.00	15.00	15.00	15.00	15.00
Lead, St. Louis	11.80	11.80	11.80	11.80	11.80	11.80

Note: Quotations are going prices.
*Tentative.

MILL PRODUCTS

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 27.4¢; 4S, 61S-O, 29.3¢; 52S, 31.4¢; 24S-O, 24S-OAL, 30.3¢; 75S-O, 75S-OAL, 36.8¢; 0.081 in., 2S, 3S, 28.4¢; 4S, 61S-O, 30.7¢; 52S, 32.8¢; 24S-O, 24S-OAL, 31.4¢; 75S-O, 75S-OAL, 38.5¢; 0.032 in., 2S, 3S, 30.0¢ 4S, 61S-O, 34.0¢; 52S 36.7¢ 24S-O, 24S-OAL, 38.4¢; 75S-O, 75S-OAL, 48-1¢.

Plate: ¼ in., and heavier: 2S, 3S, F, 24.8¢ 4S-F, 27¢; 52S-F, 28.1¢; 61S-O, 27.6¢; 24S-F, 24S-FAL, 28.1¢; 75S-F, 75S-FAL, 34.9¢.

Extruded Solid Shapes: Shape factors 1 to 4, 33.6¢ to 67¢; 11 to 13, 34.3¢ to 79¢; 23 to 25, 36.3¢ to $1.08; 35 to 37, 43.3¢ to $1.66.

Rod Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 24.5¢ to 31¢; Cold-finished, 0.375 to 3 in., 2S, 3S, 37¢ to 32.5¢.

Screw Machine Stock: Rounds, 11S-T3, R317-T4, ⅛ to 11/32 in., 49.5¢ to 38.5¢; ⅜ to 1½ in., 38¢ to 36¢; 1 9/16 to 3 in., 36¢ to 33¢; 17S-T4 lower by 1¢ per lb. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.; 2S, 36.5¢ to 27¢; 52S, 44.5¢ to 32.5¢; 56S, 47.5¢ to 39¢; 17S-T4, 50.5¢ to 35¢; 61S-T4, 45¢ to 34.5¢; 75S-T-6, 76.5¢ to 55.5¢.

Extruded Tubing, Rounds: 63S-T5; OD in in.: 1¼ to 2, 33.5¢ to 49¢; 2 to 4, 30.5¢ to 41.3¢; 4 to 6, 31¢ to 37.8¢; 6 to 9, 31.5¢ to 35.3¢.

Roofing Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., $1.008; 96 in., $1.344; 120 in., $1.679; 144 in., $2.017. **Gage** 0.024 in. x 28 in., 72 in., $1.224; 96 in., $1.633; 120 in., $2.042; 144 in., $2.451. **Coiled Sheet:** 0.019 in. x 28 in., 24.7¢ per lb; 0.024 in. x 28 in., 23.7¢ per lb.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed)

Sheet and Plate: M-O, FS-O. ¼ in. 58¢ to 60¢; 3/16 in. 60¢ to 62¢; ⅛ in. 62¢ to 64¢; B & S gage 10, 63¢ to 65¢; 12, 67¢ to 69¢; 14, 73¢ to 78¢; 16, 80¢ to 85¢; 18, 88¢ to 93¢; 20, $1.00 to $1.05; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, FS, diam in., ¼ in. to 0.311, 66¢; ½ in. to ¾, 50¢; 1¼ to 1.749, 47¢; 2½ to 5 in., 45¢. Other alloys higher. Base: Up to ¾ in., diam, 10,000 lb; ¾ in. to 1¾ in., 20,000 lb; 1¾ in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M, FS, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb per ft, per. up to 3.5 in., 59.5¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 55¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 50.5¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 47.5¢ 4 to 6 lb per ft, per. up to 28 in. 46.5¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ lb to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, FS, wall thickness, outside diam, in., 0.049 to 0.057, ¼ in. to 5/16, $1.40; 5/16 to ¾, $1.26; ½ to ⅝, 93¢; 1 to 2 in., 76¢; 0.165 to 0.219, ⅝ to ¾, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1½ in., 10,000 lb; 1½ in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

Nickel and Monel

(Base prices, cents per lb, f.o.b. mill)

	"A" Nickel	Monel
Sheets, cold-rolled	69	53
Strip, cold-rolled	75	56
Rods and bars	65	61
Angles, hot-rolled	65	61
Plates	67	62
Seamless tubes	98	86
Shot and blocks	..	46

Copper, Brass, Bronze

(Cents per lb, freight prepaid on 200 lb)

	Sheets	Rods	Extruded Shapes
Copper	37.43	....	37.03
Copper, h-r	....	33.28	....
Copper, drawn	....	34.53	....
Low brass	35.52	35.21	....
Yellow brass	34.19	33.88	....
Red brass	35.96	35.65	....
Naval brass	38.90	32.96	34.22
Leaded brass	....	28.54	32.65
Com'l bronze	36.93	36.62	....
Manganese bronze	42.40	36.27	37.85
Phosphor bronze	55.11	55.36	....
Muntz metal	37.13	32.69	34.94
Everdur, Herculoy, Olympic, etc.	42.05	40.99	....
Nickel silver 10 pct	45.48	47.74	....
Arch. bronze	....	....	32.65

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	17.50
Aluminum pig	16.50
Antimony, American, Laredo, Tex.	24.50
Beryllium metal, 95%, lumps, beads	$95.00
Beryllium copper, 3.75-4.25% Be, dollars per lb contained Be	$30.00
Beryllium aluminum 5% Be, dollars per lb contained Be	$65.00
Bismuth, ton lots	$2.00
Cadmium, del'd	$2.15
Cobalt, 97-99% (per lb)	$1.80 to $1.87
Copper, electro, Conn. Valley	22.50
Copper, Lake, delivered	22.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$160
Lead, St. Louis	11.80
Lead, New York	12.00
Magnesium, 99.8+%, f.o.b. Freeport Tex., 10,000 lb	22.50
Magnesium, sticks, 100 to 500 lb	39.00¢ to 41.00¢
Mercury, dollars per 76-lb flask f.o.b. New York	$74 to $80
Nickel, electro, f.o.b. New York	51.22
Nickel oxide sinter, f.o.b. Copper Cliff, Ont., contained nickel	44.25
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz	$74 to $77
Silver, New York, cents per oz.	72.75
Tin, New York	97.00
Zinc, East St. Louis	15.00
Zinc, New York	15.72
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot	
No. 115	22.00
No. 120	21.50
No. 123	21.00
80-10-10 ingot	
No. 305	25.50
No. 315	23.50
88-10-2 ingot	
No. 210	31.50
No. 215	29.00
No. 245	24.75
Yellow ingot	
No. 405	19.00
Manganese bronze	
No. 421	23.50

Aluminum Ingot

(Cents per lb, 30,000 lb lots)

95-5 aluminum - silicon alloys	
0.30 copper, max.	20.50-20.75
0.60 copper, max.	20.25-20.75
Piston alloys (No. 122 type)	19.00-19.50
No. 12 alum. (No. 2 grade)	18.25-18.75
108 alloy	19.00-19.50
195 alloy	20.00-20.50
13 alloy	20.50-20.75
AXS-679	19.00-19.50

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	19.75-20.00
Grade 2—92-95%	18.75-19.00
Grade 3—90-92%	17.75-18.00
Grade 4—85-90%	17.25-17.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	39⅛
Electrodeposited	33⅜
Rolled, oval, straight, delivered	36.59
Forged ball anodes	41
Brass, 80-20	
Cast, oval, 15 in. or longer	34¾
Zinc, oval	23
Ball anodes	22
Nickel 99 pct plus	
Cast	68.00
Rolled, depolarized	69.00
Cadmium	$2.30
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	79½

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	52.15
Copper sulfate, 99.5 crystals, bbl.	10¾
Nickel salts, single or double, 4-100 lb bags, frt allowed	20½
Nickel chloride, 375 lb drum	27½
Silver cyanide, 100 oz lots, per oz.	61¼
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drums	45.85

SCRAP METALS

Brass Mill Scrap

(Cents per pound; add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	19½	18¾
Yellow brass	16¾	16
Red brass	18½	17⅝
Commercial bronze	18⅝	17⅝
Manganese bronze	16½	15⅝
Leaded brass rod ends	16½	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.50-19.75
No. 2 copper wire	18.50-18.75
Light copper	17.50-17.75
Refinery brass	18.00*
Radiators	13.00

*Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper wire	19.50-19.75
No. 2 copper wire	18.50-18.75
Light copper	17.50-17.75
No. 1 composition	16.00
No. 1 comp turnings	15.50
Rolled brass	13.50
Brass pipe	15.00
Radiators	13.00
Heavy yellow brass	11.75-12.00
Aluminum	
Mixed old cast	10.00-10.25
Mixed old clips	10.75-11.00
Mixed turnings, dry	10.00-10.25
Pots and pans	10.00-10.25
Low copper	11.75-12.00

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	17¾—18
No. 2 heavy copper and wire	16¾—17
Light copper	15¾—16
Auto radiators (unsweated)	11¼—11½
No. 1 composition	14¼—14½
No. 1 composition turnings	13¾—14
Clean red car boxes	12¾—13
Cocks and faucets	12¾—13
Mixed heavy yellow brass	9¾—10
Old rolled brass	10¾—11
Brass pipe	12¾—13
New soft brass clippings	14¼—14½
Brass rod ends	12¼—12½
No. 1 brass rod turnings	12 —12¼

Aluminum

Alum. pistons and struts	6 — 6½
Aluminum crankcases	8½— 9
2S aluminum clippings	11½—12
Old sheet and utensils	8½— 9
Borings and turnings	5½
Misc. cast aluminum	8½— 9
Dural clips (24S)	8½— 9

Zinc

New zinc clippings	10 —10½
Old zinc	7¾— 8
Zinc routings	5¼— 5½
Old die cast scrap	5½— 5¾

Nickel and Monel

Pure nickel clippings	36 —39
Clean nickel turnings	32 —35
Nickel anodes	36 —39
Nickel rod ends	36 —39
New Monel clippings	15 —19
Clean Monel turnings	10 —14
Old sheet Monel	14 —18
Inconel clippings	22 —26
Nickel silver clippings, mixed	9 —10
Nickel silver turnings, mixed	6 — 7

Lead

Soft scrap, lead	9¾—10
Battery plates (dry)	5¼— 5½

Magnesium

Segregated solids	9 —10
Castings	5½— 6½

Miscellaneous

Block tin	68 —70
No. 1 pewter	48 —50
No. 1 auto babbitt	43 —45
Mixed common babbitt	9¾—10
Solder joints	13½—14
Siphon tops	43 —45
Small foundry type	13 —13½
Monotype	12 —12½
Lino. and stereotype	11 —11½
Electrotype	9¾—10
New type shell cuttings	15 —15¼
Hand picked type shells	6 — 6½
Lino. and stereo. dross	4¼— 4¾
Electro. dross	2¾— 3

MARKETS—PRICES—TRENDS

SCRAP
Iron & Steel

Scrap Rises as Markets Come Back to Life

Scrap market trends now seem to have more vitality and prices are showing a definite upward trend. While a few of the markets have remained in their dormant state, these are also showing a marked underlying strength.

One thing that may have helped to hold a damper on price boosts is the fear that many dealers and brokers have expressed concerning the "probability" of price fixing and price roll-backs. It should be pointed out that absolutely nothing official has come from the Administration concerning price controls for scrap.

Another retardant has been the hot weather combined with vacation schedules. This has been particularly true of cast grades of scrap and it is expected that the prices on these will begin to rise as soon as foundries are again on normal schedules.

With the Pittsburgh embargoes off, other markets are already feeling the revitalization that this automatically brings to the scrap industry.

PITTSBURGH—With the market in a confused and perhaps critical phase, No. 1 heavy melting steel was priced at $41.50 to $42.00. Brokers have been paying $41.00 to cover for the past week and having a rather hard time of it. Turnings are strong and sales of these and other grades at prices above last week's quotations are showing the direction of the market.

CHICAGO—A large mill in the Chicago area came into the market late last week and purchased No. 1 heavy melting steel, No. 2 heavy melting steel and No. 2 dealers' bundles for $38.00, $36.00 and $31.00 per gross ton respectively. They claim to have bought all their requirements of dealers' scrap for August. These prices indicated increases of 50¢ and $1.00 per gross ton. Railroad items, low phos plate and cast grades all picked up with increases in most items.

PHILADELPHIA—There was no new mill buying in this market last week and previous quotations are holding for open-hearth grades. The market is firm. Reports indicate that the embargoes at Pittsburgh are being released. Low phos grades are much stronger, with activity at prices $1.50 to $2.00 higher. Cast grades are up by $1.00 a ton. Carwheels are up $1.50 and malleable is up $3.00. Rail specialties are up $2.00, and crop rails are up $2.50. Shoveling turnings are up $1.00. Interest in turnings from the West is reported in this market.

NEW YORK—The market here remains fairly quiet with only a little new buying early this week The underlying feeling is stronger and it was expected that steel prices would advance before the week is out. Cast scrap showed no change but prices here will probably rise as soon as the foundries return from vacation schedules.

DETROIT—Temporarily at least a hot scrap market has developed in Detroit and prices are back to the levels of a month ago. Several big industrial lists which closed last week are reported to have brought a price of $41.00 and upwards for No. 1 bundles. Dealer prices continue to lag. The better blast furnace grades are particularly strong. Much plant scrap moving today is allocated and while the threat of price controls has created a definite feeling of uncertainty, broker bullishness is strong. Demand for flashings for electric furnaces has sent these prices close to the low phos level.

CLEVELAND—Sale of a representative tonnage of No. 1 heavy melting steel in Cleveland at $41.00 and closing of the automotive lists have given terrific impetus to the scrap market here and in the Valley. In the Valley, after an appraisal of all factors, No. 1 is quotable at a top of $42.00. Some consumers are trying with something approaching desperation to stem the tide of higher prices, which at the moment looks to be irresistible. The price shown for No. 1 bundles in the last two issues was in error. Both times it should have been $38.00 to $38.50.

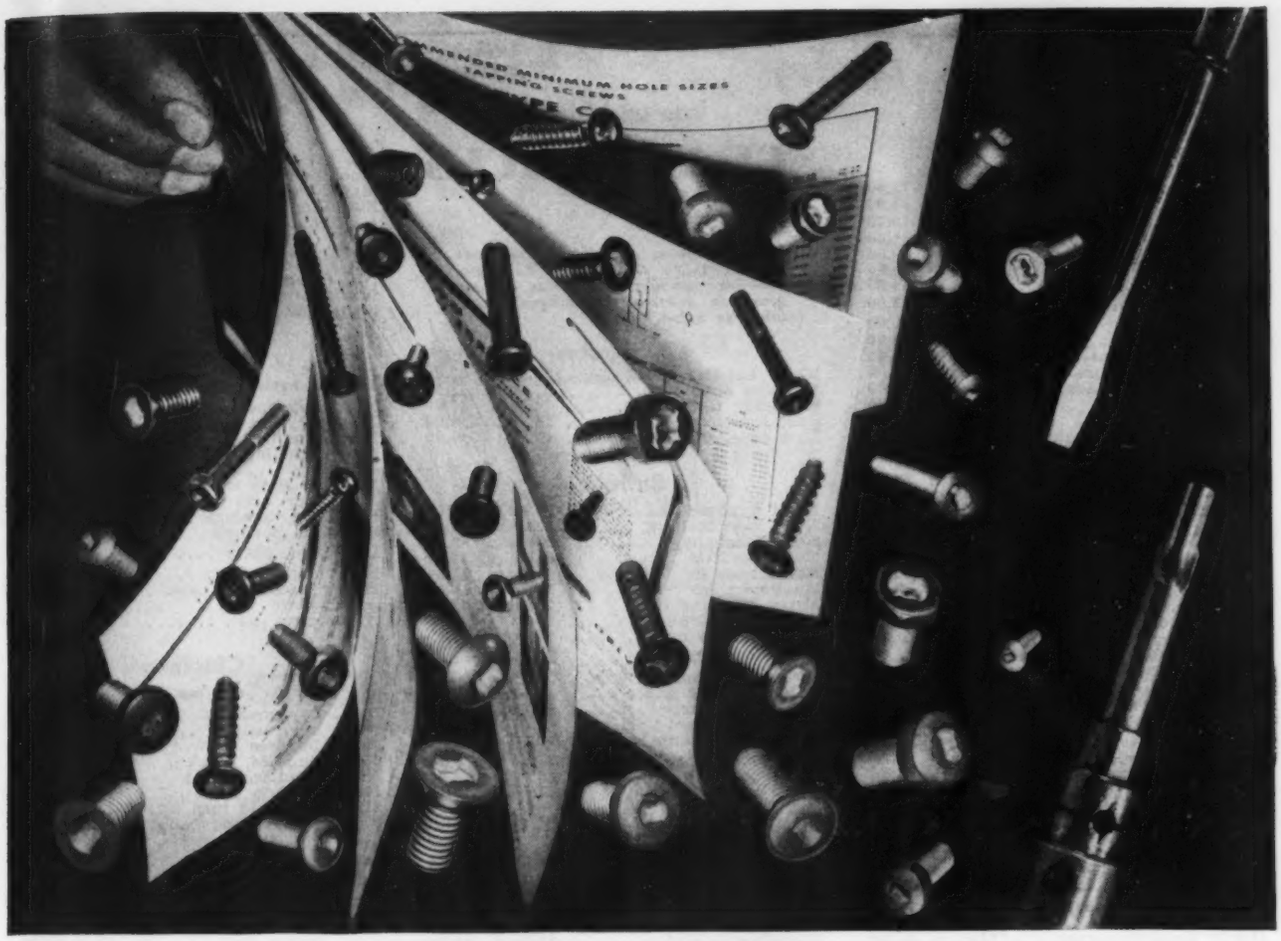
ST. LOUIS—Steel mills in this district are still playing a waiting game as far as scrap buying is concerned. A chemical firm came into the market for turnings at a higher price and some foundry grades are up both as a result of buying at home and in outside markets, especially Chicago.

CINCINNATI—No. 1 heavy melting steel is quotable at $37.00 to $38.00 here after an appraisal of all factors, including brokers' buying prices. The market is definitely stronger, and district mills are moving to line up their requirements in case of a runaway. Foundry grades are also stronger and moving freely at quoted prices.

BOSTON—There are still not many buyers for scrap in this market, but a much better feeling exists. Along with this feeling came a number of upward price revisions. No. 1 steel, No. 1 bundles, No. 1 machinery cast, and heavy breakable cast were all $1.00 per ton higher; No. 2 bundles and mixed borings and turnings were 50¢ stronger; and stove plate was $1.50 higher. The only item to lose ground was No. 1 cupola cast which was off $1.00.

BIRMINGHAM—The scrap market here is strong despite the fact that orders have been spotty for the past few weeks, and brokers anticipated a price rise this week. Owners of scrap, apparently also are holding on for an expected advance, and dealers are receiving few shipments. On a seven-car offer today by a railroad of rerolling rails one dealer offered $47.00, an advance of $3.50. One cast iron pipe company is reported offering $42.00 for No. 1 cupola cast.

BUFFALO—Dealers here still fear that price controls are coming in the scrap market. Quiet strength rules the underlying market and higher prices may be in the offing. Dealers, however, report no difficulty covering recent orders placed within prevailing ranges. All three leading mill consumers report large reserves.



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CLEVELAND 2 CHICAGO 8 NEW YORK 7

Iron and Steel

SCRAP PRICES

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$41.50 to $42.00
No. 2 hvy. melting	34.50 to 35.00
No. 1 bundles	41.50 to 42.00
No. 2 bundles	33.50 to 34.00
Machine shop turn.	29.00 to 29.50
Mixed bor. and ms. turns.	29.00 to 29.50
Shoveling turnings	34.00 to 34.50
Cast iron borings	32.50 to 33.00
Low phos. plate	45.50 to 46.00
Heavy turnings	39.50 to 40.00
No. 1 RR. hvy. melting	43.00 to 43.50
Scrap rails, random lgth.	44.50 to 45.00
Rails 2 ft and under	47.00 to 48.00
RR. steel wheels	47.00 to 48.00
RR. spring steel	47.00 to 48.00
RR. couplers and knuckles	47.00 to 48.00
No. 1 machinery cast	43.50 to 44.00
Mixed yard cast.	38.50 to 39.00
Heavy breakable cast.	35.50 to 36.00
Malleable	46.00 to 47.00

Chicago

No. 1 hvy. melting	$37.50 to $38.00
No. 2 hvy. melting	35.50 to 36.00
No. 1 factory bundles	37.50 to 38.00
No. 1 dealers' bundles	37.50 to 38.00
No. 2 dealers' bundles	30.00 to 31.00
Machine shop turn.	25.50 to 26.00
Mixed bor. and turn.	25.50 to 26.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	27.00 to 28.00
Low phos. forge crops	43.50 to 44.50
Low phos. plate	42.50 to 43.50
No. 1 RR. hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	46.00 to 47.00
Rerolling rails	48.00 to 50.00
Rails 2 ft and under	48.50 to 49.50
Locomotive tires, cut	45.00 to 46.00
Cut bolsters & side frames	44.00 to 45.00
Angles and splice bars	46.00 to 47.00
RR. steel car axles	58.00 to 60.00
RR. couplers and knuckles	44.00 to 45.00
No. 1 machinery cast.	47.00 to 48.00
No. 1 agricul. cast.	44.00 to 45.00
Heavy breakable cast.	37.00 to 38.00
RR. grate bars	36.00 to 37.00
Cast iron brake shoes	36.00 to 37.00
Cast iron car wheels	41.00 to 42.00
Malleable	49.00 to 50.00

Philadelphia

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 bundles	32.00 to 33.00
No. 2 bundles	26.00 to 27.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	25.00 to 26.00
Low phos. punchings, plate	38.50 to 40.00
Low phos. 5 ft and under	38.50 to 40.00
Low phos. bundles	34.00 to 35.00
Hvy. axle forge turn.	34.00 to 35.00
Clean cast chem. borings	33.00 to 34.00
RR. steel wheels	40.00 to 41.00
RR. spring steel	40.00 to 41.00
Rails 18 in. and under	44.00 to 45.00
No. 1 machinery cast	39.00 to 40.00
Mixed yard cast	34.00 to 35.00
Heavy breakable cast	36.00 to 37.00
Cast iron carwheels	40.50 to 41.50
Malleable	44.00 to 45.00

Cleveland

No. 1 hvy. melting	$40.50 to $41.00
No. 2 hvy. melting	35.50 to 36.00
No. 1 busheling	40.50 to 41.00
No. 1 bundles	40.50 to 41.00
No. 2 bundles	28.00 to 28.50
Machine shop turn.	26.50 to 27.00
Mixed bor. and turn.	29.50 to 30.00
Shoveling turnings	29.50 to 30.00
Cast iron borings	29.50 to 30.00
Low phos. 2 ft and under	41.50 to 42.00
Steel axle turn.	40.50 to 41.00
Drop forge flashings	40.50 to 41.00
No. 1 RR. hvy. melting	43.00 to 43.50
Rails 3 ft and under	49.00 to 50.00
Rails 18 in. and under	50.00 to 51.00
No. 1 machinery cast.	47.00 to 48.00
RR. cast.	47.00 to 48.00
RR. grate bars	35.00 to 36.00
Stove plate	39.00 to 40.00
Malleable	47.00 to 48.00

Youngstown

No. 1 hvy. melting	$41.50 to $42.00
No. 2 hvy. melting	36.50 to 37.00
No. 1 bundles	41.50 to 42.00
No. 2 bundles	$31.50 to $32.00
Machine shop turn.	32.50 to 33.00
Shoveling turnings	34.50 to 35.00
Cast iron borings	34.50 to 35.00
Low phos. plate	43.00 to 44.00

Buffalo

No. 1 hvy. melting	$36.50 to $37.00
No. 2 hvy. melting	33.00 to 33.50
No. 1 busheling	33.00 to 33.50
No. 1 bundles	34.00 to 34.50
No. 2 bundles	31.00 to 31.50
Machine shop turn.	27.00 to 28.00
Mixed bor. and turn.	27.00 to 28.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	28.00 to 29.00
Low phos. plate	38.50 to 39.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	45.00 to 47.00
RR. steel wheels	42.00 to 43.00
RR. spring steel	42.00 to 43.00
RR. couplers and knuckles	42.00 to 43.00
No. 1 machinery cast.	38.00 to 39.00
No. 1 cupola cast.	35.00 to 36.00
Small Indus. malleable	37.00 to 38.00

Birmingham

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	27.00 to 28.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	29.00 to 30.00
Machine shop turn.	25.00 to 26.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	24.00 to 25.00
Bar crops and plate	37.00 to 38.00
Structural and plate	37.00 to 38.00
Scrap rails, random lgth.	35.00 to 36.00
Rerolling rails	47.00 to 47.50
Rails 2 ft and under	46.00 to 47.00
Angles & splice bars	40.00 to 41.00
Std. steel axles	34.00 to 35.00
No. 1 cupola cast.	41.00 to 42.00
Stove plate	34.00 to 35.00
Cast iron carwheels	33.00 to 34.00

St. Louis

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	32.00 to 33.00
No. 2 bundled sheets	31.00 to 32.00
Machine shop turn.	20.50 to 21.50
Shoveling turnings	25.00 to 26.00
Rails, random lengths	39.00 to 41.00
Rails 3 ft and under	44.00 to 45.00
Locomotive tires, uncut	40.00 to 41.00
Angles and splice bars	45.00 to 46.00
Std. steel car axles	55.00 to 56.00
RR. spring steel	42.00 to 43.00
No. 1 machinery cast.	39.00 to 40.00
Hvy. breakable cast.	34.00 to 35.00
Cast iron brake shoes	36.00 to 38.00
Stove plate	33.00 to 34.00
Cast iron car wheels	39.00 to 40.00
Malleable	44.00 to 45.00

New York

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$30.50 to $31.00
No. 2 hvy. melting	26.50 to 27.00
No. 2 bundles	24.50 to 25.00
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	20.50 to 21.50
Clean cast chem. bor.	28.00 to 29.00
No. 1 machinery cast.	31.00 to 32.00
Mixed yard cast.	29.00 to 29.50
Charging box cast.	29.00 to 29.50
Heavy breakable cast.	29.50 to 30.00
Unstrp. motor blocks	22.00 to 22.50

Boston

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$29.00 to $29.50
No. 2 hvy. melting	23.00 to 23.50
No. 1 bundles	29.00 to 29.50
No. 2 bundles	$23.00 to $23.50
Machine shop turn.	20.00 to 20.50
Mixed bor. and turn.	17.50 to 18.00
Shoveling turnings	22.00 to 22.50
No. 1 busheling	28.00 to 29.00
Clean cast chem. borings	23.00 to 24.00
No. 1 machinery cast.	31.00 to 32.00
No. 1 cupola cast.	27.00 to 28.00
Heavy breakable cast.	26.50 to 27.00
Stove plate	27.00 to 27.50

Detroit

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$33.00 to $33.50
No. 2 hvy. melting	28.50 to 29.00
No. 1 bundles	38.00 to 38.50
New busheling	36.00 to 36.50
Flashings	35.50 to 36.00
Machine shop turn.	24.50 to 25.00
Mixed bor. and turn.	24.50 to 25.00
Shoveling turnings	28.50 to 29.00
Cast iron borings	28.50 to 29.00
Low phos. plate	37.00 to 37.50
No. 1 cupola cast.	40.50 to 41.00
Heavy breakable cast.	32.50 to 33.00
Stove plate	34.50 to 35.00
Automotive cast.	43.50 to 44.00

Cincinnati

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 bundles	37.00 to 38.00
No. 2 bundles, black	29.50 to 30.00
No. 2 bundles, mixed	25.50 to 26.00
Machine shop turn.	22.50 to 23.00
Mixed bor. and turn.	23.50 to 25.00
Shoveling turnings	25.50 to 26.00
Cast iron borings	25.50 to 26.00
Low phos. 18 in. under	46.00 to 47.00
Rails, random lengths	42.00 to 43.00
Rails, 18 in. and under	49.00 to 50.00
No. 1 cupola cast.	47.00 to 48.00
Hvy. breakable cast.	37.00 to 38.00
Drop broken cast.	48.00 to 49.00

San Francisco

F.o.b. shipping point:

No. 1 hvy. melting	$22.00
No. 2 hvy melting	20.00
No. 1 bundles	22.00
No. 2 bundles	17.00
No. 3 bundles	13.00
Machine shop turn.	9.00
Elec. fur. 1 ft and under	28.00
No. 1 RR. hvy. melting	22.00
Scrap rails, random lgth.	22.00
No. 1 cupola cast.	$32.50 to 34.00

Los Angeles

F.o.b. shipping point:

No. 1 hvy. melting	$22.00
No. 2 hvy. melting	20.00
No. 1 bundles	22.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Mach. shop turn.	9.00
Elec. fur. 1 ft and under	30.00
No. 1 RR. hvy. melting	22.00
No. 1 cupola cast.	$37.50 to 40.50

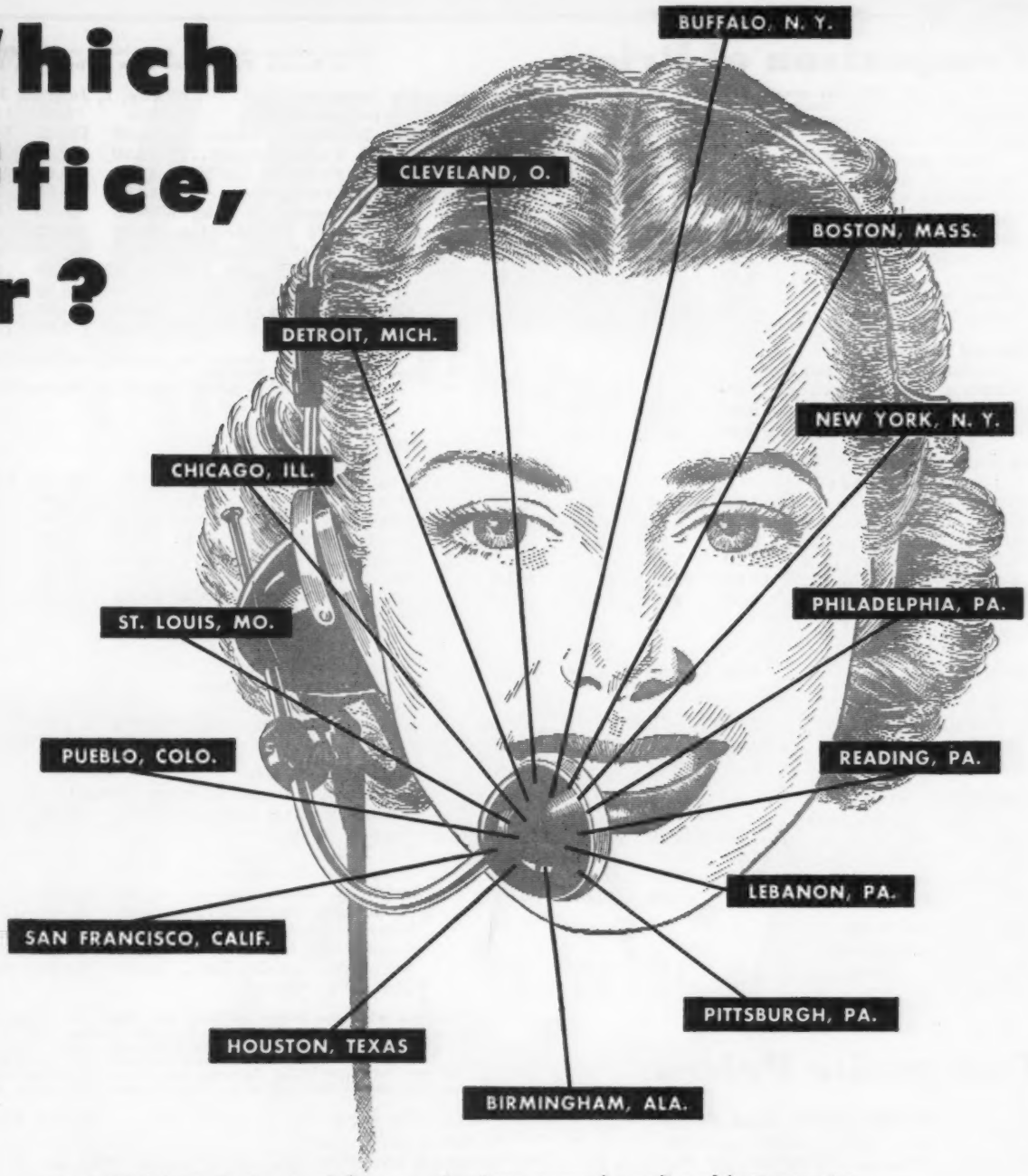
Seattle

No. 1 hvy. melting	$20.00
No. 2 hvy. melting	20.00
No. 1 bundles	18.00
No. 2 bundles	18.00
No. 3 bundles	14.00
Elec. fur. 1 ft and under	$29.00 to 30.00
RR. hvy. melting	21.00
No. 1 cupola cast	35.00
Heavy breakable cast.	20.00

Hamilton, Ont.

No. 1 hvy. melting	$30.00
No. 1 bundles	30.00
No. 2 bundles	29.50
Mechanical bundles	28.00
Mixed steel scrap	26.00
Mixed bor. and turn.	23.00
Rails, remelting	30.00
Rails, rerolling	33.00
Bushelings	24.50
Bush., new fact, prep'd.	29.00
Bush., new fact, unprep'd.	23.00
Short steel turnings	23.00
Cast scrap	40.00

Which office, sir?



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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	Aug. 1, 1950	July 25, 1950	July 4, 1950	Aug. 2, 1949
Hot-rolled sheets	3.35	3.35	3.35	3.25
Cold-rolled sheets	4.10	4.10	4.10	4.00
Galvanized sheets (10 ga)	4.40	4.40	4.40	4.40
Hot-rolled strip	3.25	3.25	3.25	3.25
Cold-rolled strip	4.21	4.21	4.21	4.038
Plate	3.50	3.50	3.50	3.40
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	33.00	33.00	33.00	33.25
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes.	$7.50	$7.50	$7.50	$7.75
Tinplate, electro (0.50 lb)	6.60	6.60	6.60	6.70
Special coated mfg. ternes	6.35	6.35	6.35	6.65
Bars and Shapes: (cents per pound)				
Merchant bars	3.45	3.45	3.45	3.35
Cold-finished bars	4.145	4.145	4.145	3.995
Alloy bars	3.95	3.95	3.95	3.75
Structural shapes	3.40	3.40	3.40	3.25
Stainless bars (No. 302)	28.50	28.50	28.50	28.50
Wrought iron bars	9.50	9.50	9.50	9.50
Wire: (cents per pound)				
Bright wire	4.50	4.50	4.50	4.15
Rails: (dollars per 100 lb)				
Heavy rails	$3.40	$3.40	$3.40	$3.20
Light rails	3.75	3.75	3.75	3.55
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$54.00	$54.00	$54.00	$52.00
Slabs, rerolling	54.00	54.00	54.00	52.00
Forging billets	63.00	63.00	63.00	61.00
Alloy blooms, billets, slabs	66.00	66.00	66.00	63.00
Wire Rod and Skelp: (cents per pound)				
Wire rods	3.85	3.85	3.85	3.40
Skelp	3.15	3.15	3.15	3.25

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron: (per gross ton)	Aug. 1, 1950	July 25, 1950	July 4, 1950	Aug. 2, 1949
No. 2, foundry, Phila.	$50.42	$50.42	$50.42	$50.56
No. 2, Valley furnace	46.50	46.50	46.50	46.50
No. 2, Southern Cin'ti	49.08	49.08	49.08	45.47
No. 2, Birmingham	42.38	42.38	42.38	39.38
No. 2, foundry, Chicago†	46.50	46.50	46.50	46.50
Basic del'd Philadelphia	49.92	49.92	49.92	49.74
Basic, Valley furnace	46.00	46.00	46.00	46.00
Malleable, Chicago†	46.50	46.50	46.50	46.50
Malleable, Valley	46.50	46.50	46.50	46.50
Charcoal, Chicago	68.56	68.56	68.56	73.78
Ferromanganese‡	173.40	173.40	173.40	173.40

†The switching charge for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy page.

Scrap: (per gross ton)				
Heavy melt'g steel, P'gh.	$41.75	$40.75	$41.75	$20.75
Heavy melt'g steel, Phila.	32.50	32.50	33.75	17.50
Heavy melt'g steel, Ch'go	37.75	37.25	37.50	21.50
No. 1 hy. com. sh't, Det.	38.25	36.00	37.50	14.75
Low phos. Young'n	43.50	42.75	44.25	20.75
No. 1 cast, Pittsburgh	43.75	43.75	43.75	27.00
No. 1 cast, Philadelphia	39.50	38.50	39.50	27.50
No. 1 cast, Chicago	47.50	45.50	45.50	34.50
Coke: Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.25	$14.25	$14.25	$14.25
Foundry coke, prompt	16.25	16.25	16.25	15.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	22.50	22.50	22.50	17.625
Copper, Lake, Conn.	22.625	22.625	22.625	17.75
Tin, Straits, New York	97.00†	96.00*	79.75	$1.03
Zinc, East St. Louis	15.00	15.00	15.00	10.00
Lead, St. Louis	11.80	11.80	10.80	14.55
Aluminum, virgin	17.50	17.50	17.50	17.00
Nickel, electrolytic	51.22	51.22	51.22	42.93
Magnesium, ingot	22.50	22.50	21.50	20.50
Antimony, Laredo, Tex.	24.50	24.50	24.50	38.50

†Tentative. *Revised.

Composite Prices

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

	Finished Steel Base Price	Pig Iron	Scrap Steel
Aug. 1, 1950	3.837¢ per lb.	$46.38 per gross ton	$37.33 per gross ton
One week ago	3.837¢ per lb.	46.38 per gross ton	36.83 per gross ton
One month ago	3.837¢ per lb.	46.38 per gross ton	37.67 per gross ton
One year ago	3.705¢ per lb.	45.91 per gross ton	19.92 per gross ton

	Finished Steel Base Price High	Finished Steel Base Price Low	Pig Iron High	Pig Iron Low	Scrap Steel High	Scrap Steel Low
1950	3.837¢ Jan. 3	3.837¢ Jan. 3	$46.38 Feb. 7	$45.88 Jan. 3	$40.92 June 6	$26.25 Jan. 3
1949	3.837¢ Dec. 27	3.3705¢ May 3	46.87 Jan. 18	45.88 Sept. 6	43.00 Jan. 4	19.33 June 28
1948	3.721¢ July 27	3.193¢ Jan. 1	46.91 Oct. 12	39.58 Jan. 6	43.16 July 27	39.75 Mar. 9
1947	3.193¢ July 29	2.848¢ Jan. 1	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May 20
1946	2.848¢ Dec. 31	2.464¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945	2.464¢ May 29	2.396¢ Jan. 1	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.396¢	2.396¢	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943	2.396¢	2.396¢	23.61	23.61	$19.17	$19.17
1942	2.396¢	2.396¢	23.61	23.61	19.17	19.17
1941	2.396¢	2.396¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	32.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
1935	2.07542¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov. 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
1932	1.89196¢ July 5	1.83910¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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STEEL PRICES

Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page.
Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

	Pittsburgh	Chicago	Gary	Cleveland	Canton Massillon	Middletown	Youngstown	Bethlehem	Buffalo	Conshohocken	Johnstown	Sparrows Point	Granite City	Detroit
INGOTS Carbon forging, net ton	$50.00[1]													$50.00[11]
Alloy, net ton	$51.00[1,17]													$51.00[11]
BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton	$53.00[1]	$53.00[1]	$53.00[1]				$57.00[13]		$53.00[3]	$58.00[26]	$53.00[3]			
Carbon forging billets, net ton	$63.00[1]	$63.00[1,4]	$63.00[1,8]	$63.00[4]			$63.00[25]		$63.00[3,4]	$65.00[26]	$63.00[3]			$63.00[11]
Alloy, net ton	$66.00[1,17]	$66.00[1,4]	$66.00[1]		$66.00[4,42]		$66.00[13]	$66.00[3]	$66.00[3,4]	$68.00[26]	$66.00[3]			$66.00[11]
PIPE SKELP	3.15[1]						3.15[1,4]							
WIRE RODS	3.85[2,18]	3.85[2,4,33]	3.85[6]	3.85[2]			3.85[6]				3.85[3]	3.95[3]		
SHEETS Hot-rolled (18 ga. & hvr.)	3.35[1,5,9,15]	3.35[23]	3.35[1,6,8]	3.35[4,8]			3.35[1,4,6] 3.50[13]		3.35[3]	3.45[26]		3.35[3]		3.55[12] 4.15[47]
Cold-rolled	4.10[1,5,7,9,15] 5.10[62]		4.10[1,6,8]	4.10[4,15]		4.10[7]	4.10[4,6]		4.10[3]			4.10[3]	4.30[22]	4.30[12]
Galvanized (10 gage)	4.40[1,9,15]		4.40[1,8]		4.40[4]		4.65[64] 4.75[44]					4.40[3]		
Enameling (12 gage)	4.40[1]		4.40[1,8]	4.40[4]		4.40[7]	4.40[6] 4.90[76]						4.60[23]	4.70[12]
Long ternes (10 gage)	4.80[9,15]		4.80[1]			4.80[7]	4.80[64]							
Hi Str. low alloy, h.r.	5.05[1,5,9]	5.05[1]	5.05[1,6,8]	5.05[4,8]			5.05[1,4,6,13]		5.05[3]	5.05[26]		5.05[3]		5.25[12]
Hi str. low alloy, c.r.	6.20[1,5,9]		6.20[1,6,8]	6.20[4,8]			6.20[4,6,13]		6.20[3]			6.20[3]		6.40[12]
Hi str. low alloy, galv.	6.75[1]											6.75[3]		
STRIP Hot-Rolled	3.25[5,7,9,38] 3.50[41]	3.25[3,66]	3.25[1,6,8]	3.25[5]			3.25[1,4,6] 3.50[13]		3.25[3]	3.35[26]		3.25[3]		3.45[12] 4.05[47]
Cold-rolled	4.15[5,7,9] 4.50[63]	4.30[9] 4.50[66]	4.30[9]	4.15[3,8]		4.15[7]	4.15[4,6,48,49] 4.50[13,40]		4.15[3]			4.15[3]		4.35[12] 4.75[68] 4.95[47]
Hi str. low alloy, h.r.	4.95[9]		4.95[1,6,8]	4.95[5]			4.95[1,4,6,13]		4.95[3]	4.95[26]		4.95[3]		5.15[12]
Hi Str. low alloy, c.r.	6.20[9]			6.20[3,8]			6.20[4,6,13]		6.40[3]			6.40[3]		6.40[12]
TINPLATE† Cokes, 1.50-lb base box 1.25 lb, deduct 20¢	$7.50[1,5,9,15]		$7.50[1,6,8]				$7.50[4]					$7.60[3]	$7.70[22]	
Electrolytic 0.25, 0.50, 0.75 lb box	Deduct $1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price													
BLACKPLATE, 29 gage Hollowware enameling	5.30[1,5,15]		5.30[1,6]				5.30[4]					5.40[3]	5.50[22]	
BARS Carbon steel	3.45[1,5,9]	3.45[1,4,33]	3.45[1,6,8]	3.45[4]	3.45[4]		3.45[1,4,6]		3.45[3,4]		3.45[3]			3.65[12]
Reinforcing‡	3.45[1,5]	3.45[4]	3.45[1,6,8]	3.45[4]			3.45[1,4,6]		3.45[3,4]		3.45[3]	3.45[3]		
Cold-finished	4.10[5] 4.15[2,4,17,52,69,71]	4.15[2,22,69,70]	4.15[4,73,74]	4.15[2,61]	4.15[4,33,52]		4.15[4,40,57]		4.15[70]					4.35[12] 4.30[64]
Alloy, hot-rolled	3.95[1,17]	3.95[1,4,28]	3.95[1,6,8]		3.95[4]		3.95[1,6,25]	3.95[3]	3.95[3,4]		3.95[3]			4.25[12]
Alloy, cold-drawn	4.90[2,17,52,69,71]	4.90[2,22,69,70]	4.90[4,73,74]	4.90[2,61]	4.90[4,42,52]		4.90[6,25,57]	4.90[3]	4.90[3,70]					5.05[64]
Hi str. low alloy, h.r.	5.20[1,5]		5.20[1,6,8]	5.20[4]			5.20[1,6]	5.20[3]	5.20[3]		5.20[3]			5.40[12]
PLATE Carbon steel	3.50[1,5]	3.50[1]	3.50[1,6,8]	3.50[4]			3.50[1,13]		3.80[3]	3.80[26]	3.50[3]	3.50[3]		3.75[12]
Floor Plates	4.55[1]	4.55	4.55[3]	4.55[5]						4.55[26]				
Alloy	4.40[1]	4.40[1]	4.40[1]				4.40[13]			4.40[26]	4.40	4.40[3]		
Hi Str. low alloy	5.35[1,5]	5.35[1]	5.35[1,8]	5.35[4,8]			5.35[6]			5.35[26]	5.35[3]	5.35[3]		5.60[12]
SHAPES, Structural	3.40[1,5,9]	3.40[1,23]	3.40[1,6,8]					3.45[3]	3.45[3]		3.45[3]			
Hi Str. low alloy	5.15[1,5]	5.15[1]	5.15[1,6,8]				5.15[6]	5.20[3]	5.20[3]		5.20[3]			
MANUFACTURERS' WIRE Bright	4.50[2,5,18]	4.50[2,4,12,33,34]		4.50[3,77]			4.50[6]	Kokomo—4.60[20]			4.50[3]	4.60[3]	Duluth—4.50[3] Pueblo—4.75[14]	
PILING, Steel Sheet	4.20[1,9]	4.20[1]							4.20[3]					

Smaller numbers indicate producing companies. See key at right. Prices are in cents per lb unless otherwise noted. Extras apply.

IRON AGE

STEEL PRICES

Kansas City	Houston	Birmingham	WEST COAST Seattle, San Francisco, Los Angeles, Fontana		
			F=$76.00		INGOTS Carbon forging, net ton
	$59.00[83]		F=$77.00		Alloy, net ton
		$53.00[11]	F=$72.00[19]		BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton
	$71.00[83]	$63.00[11]	F=$82.00[19]	Geneva=$63.00[16]	Carbon forging billets, net ton
	$74.00[83]		F=$85.00[19]		Alloy net ton
					PIPE SKELP
	4.25[83]	3.85[11]	SF=4.50[24] LA=4.65[24,62]	Portsmouth=3.85[20] Worcester=4.15[3]	WIRE RODS
		3.35[4,11]	SF, LA=4.05[24] F=4.25[19]	Ashland=3.35[7] Niles=3.50[64]	SHEETS Hot-rolled (18 ga. & hvr.)
		4.10[11]	SF=5.05[24] F=5.00[19]		Cold-rolled
		4.40[4,11]	SF, LA=5.15[24]	Ashland=4.40[7] Kokomo=4.50[30]	Galvanized (10 gage)
					Enameling (12 gage)
					Long ternes (10 gage)
		5.05[11]	F=6.74[19]		Hi Str. low alloy, h.r.
			F=7.08[19]		Hi Str. low alloy, c.r.
					Hi Str. low alloy, galv.
3.85[83]	3.65[83]	3.25[11]	SF, LA=4.00[24,62] F=4.40[19], S=4.25[62]	Ashland=3.25[7] Atlanta=3.40[65]	STRIP Hot-rolled
			F=5.75[19] LA=5.85[27]	New Haven=4.65[3], 5.00[68] Trenton=5.00[83]	Cold-rolled
		4.95[11]	F=6.64[19]		Hi Str. low alloy, h. r.
			F=6.95[19]		Hi Str. low alloy, c. r.
		7.60[11]	SF=8.25[24]		TINPLATE Cokes, 1.50-lb base box 1.25 lb, deduct 20¢
Deduct $1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price					Electrolytic 0.25, 0.50, 0.75 lb box
					BLACKPLATE, 29 gage Hollowware enameling
4.05[83]	3.85[83]	3.45[4,11]	SF, LA=4.15[24] LA=4.15[62]	Atlanta=3.60[65]	BARS Carbon steel
4.05[83]	3.85[83]	3.45[4,11]	SF, S=4.20[62] F=4.10[19]	Atlanta=3.60[65]	Reinforcing‡
				Putnam, Newark=4.55[69]	Cold-finished
4.55[83]	4.35[83]		LA=5.00[62] F=4.95[19]		Alloy, hot-rolled
				Newark,[69] Worcester[3]=5.20 Hartford=5.20[4]	Alloy, cold-drawn
		5.20[11]	F=6.25[19]		Hi Str. low alloy, h.r.
	3.90[83]	3.50[4,11]	F=4.10[19] S=4.40[62] Geneva=3.50[16]	Claymont=3.60[29] Coatesville=3.60[21] Harrisburg=3.85[36]	PLATE Carbon steel
				Harrisburg=4.55[36]	Floor plates
			F=5.40[19]	Coatesville=4.50[21]	Alloy
		5.35[11]	F=5.95[19]	Geneva=5.35[16]	Hi Str. low alloy
4.00[83]	3.80[83]	3.40[11]	SF=3.95[62] LA=4.00[24,62]	Phoenixville=3.45[56] Geneva=3.40[16]	SHAPES, Structural
		5.15[11]	F=4.00[19] S=4.05[62]	Fontana=5.75[19] Geneva=5.15[16]	Hi Str. low alloy
5.10[83]	4.90[83]	4.50[4,11]	SF, LA=5.45[24,62]	Portsmouth=4.50[20] Worcester=4.80[3]	MANUFACTURERS' WIRE Bright

Notes: †Special coated mfg ternes deduct $1.15 from 1.50-lb coke base box price. Can-making quality blackplate, 55 to 128-lb, deduct $1.90 from 1.50-lb coke base box. ‡Straight lengths only from producer to fabricator.

KEY TO STEEL PRODUCERS

With Principal Offices

1 Carnegie-Illinois Steel Corp., Pittsburgh
2 American Steel & Wire Co., Cleveland
3 Bethlehem Steel Co., Bethlehem
4 Republic Steel Corp., Cleveland
5 Jones & Laughlin Steel Corp., Pittsburgh
6 Youngstown Sheet & Tube Co., Youngstown
7 Armco Steel Corp., Middletown, Ohio
8 Inland Steel Co., Chicago
9 Weirton Steel Co., Weirton, W. Va.
10 National Tube Co., Pittsburgh
11 Tennessee Coal, Iron & R. R. Co., Birmingham
12 Great Lakes Steel Corp., Detroit
13 Sharon Steel Corp., Sharon, Pa.
14 Colorado Fuel & Iron Corp., Denver
15 Wheeling Steel Corp., Wheeling, W. Va.
16 Geneva Steel Co., Salt Lake City
17 Crucible Steel Co. of America, New York
18 Pittsburgh Steel Co., Pittsburgh
19 Kaiser Steel Corp., Oakland, Calif.
20 Portsmouth Div., Detroit Steel Corp., Detroit
21 Lukens Steel Co., Coatesville, Pa.
22 Granite City Steel Co., Granite City, Ill.
23 Wisconsin Steel Co., South Chicago, Ill.
24 Columbia Steel Co., San Francisco
25 Copperweld Steel Co., Glassport, Pa.
26 Alan Wood Steel Co., Conshohocken, Pa.
27 Calif. Cold Rolled Steel Corp., Los Angeles
28 Allegheny Ludlum Steel Corp., Pittsburgh
29 Worth Steel Co., Claymont, Del.
30 Continental Steel Corp., Kokomo, Ind.
31 Rotary Electric Steel Co., Detroit
32 Laclede Steel Co., St. Louis
33 Northwestern Steel & Wire Co., Sterling, Ill.
34 Keystone Steel & Wire Co., Peoria, Ill.
35 Central Iron & Steel Co., Harrisburg, Pa.
36 Carpenter Steel Co., Reading, Pa.
37 Eastern Stainless Steel Corp., Baltimore
38 Washington Steel Corp., Washington, Pa.
39 Jessop Steel Co., Washington, Pa.
40 Blair Strip Steel Co., New Castle, Pa.
41 Superior Steel Corp., Carnegie, Pa.
42 Timken Steel & Tube Div., Canton, Ohio
43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
44 Reeves Steel & Mfg. Co., Dover, Ohio
45 John A. Roebling's Sons Co., Trenton, N. J.
46 Simonds Saw & Steel Co., Fitchburg, Mass.
47 McLouth Steel Corp., Detroit
48 Cold Metal Products Co., Youngstown
49 Thomas Steel Co., Warren, Ohio
50 Wilson Steel & Wire Co., Chicago
51 Sweet's Steel Co., Williamsport, Pa.
52 Superior Drawn Steel Co., Monaca, Pa.
53 Tremont Nail Co., Wareham, Mass.
54 Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
55 Ingersoll Steel Div., Chicago
56 Phoenix Iron & Steel Co., Phoenixville, Pa.
57 Fitzsimmons Steel Co., Youngstown
58 Stanley Works, New Britain, Conn.
59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
60 American Cladmetals Co., Carnegie, Pa.
61 Cuyahoga Steel & Wire Co., Cleveland
62 Bethlehem Pacific Coast Steel Corp., San Francisco
63 Follansbee Steel Corp., Pittsburgh
64 Niles Rolling Mill Co., Niles, Ohio
65 Atlantic Steel Co., Atlanta
66 Acme Steel Co., Chicago
67 Joslyn Mfg. & Supply Co., Chicago
68 Detroit Steel Corp., Detroit
69 Wyckoff Steel Co., Pittsburgh
70 Bliss & Laughlin, Inc., Harvey, Ill.
71 Columbia Steel & Shafting Co., Pittsburgh
72 Cumberland Steel Co., Cumberland, Md.
73 La Salle Steel Co., Chicago
74 Monarch Steel Co., Inc., Hammond, Ind.
75 Empire Steel Co., Mansfield, Ohio
76 Mahoning Valley Steel Co., Niles, Ohio
77 Oliver Iron & Steel Co., Pittsburgh
78 Pittsburgh Screw & Bolt Co., Pittsburgh
79 Standard Forging Corp., Chicago
80 Driver Harris Co., Harrison, N. J.
81 Detroit Tube & Steel Div., Detroit
82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
83 Sheffield Steel Corp., Kansas City
84 Plymouth Steel Co., Detroit
85 John A. Roebling's Sons Co., Trenton, N. J.

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	13.75	14.50	16.00	15.50	23.75	19.25	21.00	12.25	14.25	12.50
Slabs, billets, rerolling	18.00	19.25	21.25	20.25	31.25	25.50	27.75	16.60	19.50	16.25
Forg. discs, die blocks, rings	32.00	32.00	34.50	33.50	50.50	38.00	42.50	26.00	26.50	26.50
Billets, forging	25.75	25.75	27.75	27.00	40.50	30.50	34.25	21.00	21.50	21.50
Bars, wire, structurals	30.00	30.00	32.50	31.50	47.50	35.50	40.00	24.50	25.00	25.00
Plates	32.00	32.00	34.00	34.00	50.50	39.50	44.00	26.00	26.50-27.00	26.50
Sheets	39.00	39.00	41.00	41.00	54.50	47.00	51.50	34.50	35.00	37.00
Strip, hot-rolled	25.50	27.00	31.25	29.00	47.25	35.75	40.00	22.50	29.25	23.00
Strip, cold-rolled	32.00	34.50	38.00	36.50	56.50	46.00	50.00	28.50	35.00	29.00

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38,39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 46.

Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38; W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, 13; Butler, Pa., 7.

Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.

Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28.

Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44.

Plates: Brackenridge, Pa., 28; Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.

Forged discs, die blocks, rings: Pittsburgh, 1, 17; Syracuse, 17; Ferndale, Mich., 28.

Forging billets: Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1.

ELECTRICAL SHEETS

22 gage, HR cut lengths, f.o.b. mill

	Cents per lb.
Armature	6.20
Electrical	6.70
Motor	*7.95
Dynamo	8.75
Transformer 72	9.30
Transformer 65	9.85
Transformer 58	10.55
Transformer 52	11.35

PRODUCING POINTS—Beech Bottom, W. Va., 15; Brackenridge, Pa., 28; Follansbee, W. Va., 63; Granite City, Ill., 22*; add 0.20¢: Indiana Harbor, Ind., 8; Mansfield, Ohio, 75; Niles, Ohio, 64, 76; Vandergrift, Pa., 1; Warren, Ohio, 4; Zanesville, Ohio, 7.

MERCHANT WIRE PRODUCTS

To dealers, f.o.b. mill	*Base Column*	*Pittsburg, Calif.*
Standard & coated nails*	106	125§
Woven wire fence†	116	139
Fence posts, carloads††	116	...
Single loop bale ties	113	137
Galvanized barbed wire**	126	146
Twisted barbless wire	126	146

* Pgh., Chi., Duluth; Worcester, 6 columns higher; Houston, 8 columns higher; Kansas City, 12 columns higher. † 15½ gage and heavier. ** On 80 rod spools, in carloads. †† Duluth, Joliet; Johnstown, 112.

	Base per 100 lb	*Pittsburg, Calif.*
Merch. wire annealed‡	$5.35	$6.30
Merch. wire, galv.‡	5.60	6.55
Cut nails, carloads‡‡	6.75	...

‡ Add 30¢ at Worcester; 20¢ at Chicago; 10¢ at Sparrows Pt.
‡‡ Less 20¢ to jobbers.
§ Torrance 126.

PRODUCING POINTS — *Standard, Coated or galvanized nails, woven wire fence, bale ties, and barbed wire:* Alabama City, Ala., 4; Atlanta, 65; Aliquippa, Pa., (except bale ties), 5; Bartonville, Ill. (except bale ties), 34; Chicago, 4; Donora, Pa., 2; Duluth, 2; Fairfield, Ala., 11; Johnstown, Pa. (except bale ties), 3; Joliet, Ill., 2; Kokomo, Ind., 30; Minnequa, Colo., 14; Monessen, Pa. (except bale ties), 18; Pittsburg, Calif., 24; Portsmouth, Ohio, 20; Rankin, Pa. (except bale ties), 2; Sparrows Point (except woven fence), 3; Sterling, Ill., 33; San Francisco (except nails and woven fence), 14; Torrance, Calif. (nails only). 24; Worcester (nails only), 2; Houston (except bale ties), 83; Kansas City, 83.

Fence Posts: Duluth, 2; Johnstown, Pa., 3; Joliet, Ill., 2; Minnequa, Colo., 14; Moline, Ill., 4; Williamsport, Pa., 51.

Cut nails: Wheeling, W. Va., 15; Conshohocken, Pa., 26; Warehame, Mass., 53.

RAILS, TRACK SUPPLIES

	F.o.b. mill
Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb	$3.40
Joint bars, per 100 lb	4.40
Light rails, per 100 lb	3.75

	Base Price cents per lb
Track spikes†	5.60
Axles	5.25
Screw spikes	8.60
Tie plates	4.20
Pittsburg, Torr., Calif.; Seattle	4.35
Track bolts, untreated	8.85
Track bolts, heat treated, to railroads	9.10

†Kansas City, 5.85¢.

PRODUCING POINTS—*Standard rails:* Bessemer, Pa., 1; Ensley, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Minnequa, Colo., 14; Steelton, 3.

Light rails: All the above except Indiana Harbor and Steelton, plus Fairfield, Ala., 11; Johnstown, 3; Minnequa, 14.

Joint bars: Bessemer, Pa., 1; Fairfield, Ala., 11; Indiana Harbor, Ind., 8; Joliet, Ill., 1; Lackawanna, N. Y., 3; Steelton, Pa., 3; Minnequa, Colo., 14.

Track spikes: Indiana Harbor, Ind., 6, 8; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 5; Chicago, 4; Struthers, 6; Youngstown, 4.

Track bolts: Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 77, 78.

Axles: Indiana Harbor, Ind., 79; Johnstown, Pa., 3.

Tie plates: Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Pittsburg, Calif., 24; Pittsburgh, 4; Seattle, 62; Steelton, Pa., 3; Torrance, Calif., 24; Minnequa, Colo., 14.

Numbers after producing points correspond to steel producers. See key on Steel Price page.

PIPE AND TUBING

Base discounts, f.o.b. mills
Base price about $200.00 per net ton

Standard, T & C

Steel, Buttweld*	*Black*	*Galv*
⅛-in.	40½ to 38½	21 to 19
¾-in.	43½ to 41½	25 to 23
1-in.	46 to 44	28 to 26
1¼-in.	46½ to 44½	28½ to 26½
1½-in.	47 to 45	29 to 27
2-in.	47½ to 45½	29½ to 27½
2½ to 3-in.	48 to 46	30 to 28
Steel, lapweld		
2-in.	38	19½
2½ to 3-in.	42	23½
3½ to 6-in.	43 to 40	24½ to 21½
Steel, seamless		
2-in.	36	17½
2½ to 3-in.	39	20½
3½ to 6-in.	41	22½
Wrought iron, buttweld		
⅛-in.	+26½	+56
¾-in.	+16½	+45
1 & 1¼-in.	+10½	+36
1½-in.	+ 4½	+31½
2-in.	+ 4	+32
Wrought iron, lapweld		
2-in.	+13½	+40
2½ to 3½-in.	+11	+35½
4-in.	+ 6	+29½
4½ to 8-in.	+ 8	+31
9 to 12-in.	+18	+40½

Extra Strong, Plain Ends

Steel, buttweld		
⅛-in.	39½ to 37½	21½ to 19½
¾-in	43½ to 41½	25½ to 23½
1-in.	45½ to 43½	28½ to 26½
1¼-in.	46 to 44	29 to 27
1½-in.	46½ to 44½	29½ to 27½
2-in.	47 to 45	30 to 29
2½ to 3-in.	47½ to 45½	30½ to 28½
Steel, lapweld		
2-in.	37	19½
2½ to 3-in.	42	24½
3½ to 6-in.	44½ to 41½	27 to 24
Steel, seamless		
2-in.	35	17½
2½ to 3-in.	38	21½
3½ to 6-in.	42½	25
Wrought iron, buttweld		
⅛-in.	+22	+50
¾-in.	+15½	+43
1 to 2 in.	+ 5½	+32
Wrought iron, lapweld		
2-in.	+10½	+36½
2½ to 4-in.	+ 1	+25
4½ to 6-in.	+ 5	+29½
7 & 8-in.	list	+24½
9 to 12-in.	+11½	+32½

For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. On buttweld lapweld steel pipe, jobbers are granted a discount of 5 pct.
* Fontana, Calif., deduct 11 points from figures in left columns.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut lengths 10 to 24 ft inclusive.

OD in In.	gage BWG	Seamless H.R.	Seamless C.R.	Electric Weld H.R.	Electric Weld C.D.
2	13	$20.61	$24.24	$19.99	23.51
2½	12	27.71	32.58	26.88	31.60
3	12	30.82	36.27	29.90	35.18
3½	11	38.52	45.38	37.36	43.99
4	10	47.82	56.25	46.39	54.56

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb. (Metropolitan area delivery, add 20¢ to base price except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul (*), add 15¢; Philadelphia, add 25¢).

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140 Ann.
Baltimore	5.15	6.39[1]	6.55[2] 6.65	5.59–5.59[11]	....	5.40–6.04[11]	5.69	5.59	6.19	9.69	9.99	11.12	11.49
Birmingham*	5.15[16]	5.95	6.15[7]	5.10	....	5.40	5.25	5.10	6.68	....	....	....	....
Boston	5.75	6.55[20]	6.94[5] 7.14	5.70	6.90–6.95	6.08	5.78	5.60	6.19–6.69	9.70–9.97	8.50–10.00	11.15	11.45
Buffalo	5.15	5.95	6.84	5.41	7.27	5.65	5.35	5.15	5.75	9.60	9.90	11.05	11.35
Chicago	5.15	6.20	6.85	5.10	6.80	5.40	5.25	5.10	5.65	9.25	9.55	10.70	11.00
Cincinnati*	5.42–5.97	5.98–6.24	6.39	5.35	....	5.79	5.64	5.35–5.84	5.98–6.28	9.60–9.81	9.90–10.11	11.05–11.26	11.35–11.56
Cleveland	5.15	5.95	7.00–7.10	5.24	6.35	5.52	5.37	5.12	5.75	9.36	9.66	10.81	11.11
Detroit	5.33	6.08–6.33	7.09	5.49	6.43–6.80	5.59–5.79	5.64–5.68	5.30	5.91	9.56	9.86	11.01	11.31
Houston	6.00	....	....	6.10	....	6.00	5.95	6.10	7.00	10.35–10.45	10.50–10.60	11.50	11.95–12.10
Indianapolis	....	....	....	....	7.36	....	....	....	6.15	....	....	....	....
Kansas City	5.75	6.55	7.45	5.70	6.95	6.00	5.85	5.70	6.35	9.85	10.15	11.30	11.60
Los Angeles	5.90	7.45	8.00[3]	5.95	8.70[16]	6.00	5.90	5.90	7.55	10.75	10.75	12.45	12.75
Memphis	5.93	6.68	....	5.98	6.80–8.51	6.08	5.93	5.68	6.51	....	....	....	....
Milwaukee	5.29	6.09	6.94–6.99	5.24	6.32	5.54	5.39	5.24	5.89	9.39	9.69	10.84	11.14
New Orleans*	5.50[1]	6.75 6.85[1]	....	5.55[1]	6.80 6.90[1]	5.85	5.55[1]	5.55[1]	6.75 6.80	....	....	....	....
New York	5.55	6.89[1]	7.20[2]	5.64	6.76	5.90	5.68	5.75	6.44	9.60	9.90	11.05	11.35
Norfolk	6.10[13]	7.00	....	6.30[13]	....	6.15[13]	6.20[13]	6.15[13]	7.20[13]	....	....	....	....
Philadelphia*	5.30	6.35 6.45	6.80 6.85[2]	5.65	6.29	5.65	5.45	5.65	6.21	9.35	9.65	10.80	11.10
Pittsburgh	5.15	5.95	6.60	5.20	5.95–6.00	5.35	5.25	5.10	5.75	9.25	9.55	10.70	11.00
Portland	6.60–7.10[1]	8.40[2]	....	6.85[3]	....	6.40[9]	6.50	6.45–6.45[9]	8.80[14]	12.00[18]	11.80[18]	....	....
Salt Lake City	5.85	6.70	....	7.45	8.75	6.10[3]	5.90	7.35[3]	8.75	....	....	....	....
San Francisco*	6.20	7.60[3]	7.65[3]	6.15	7.85[16]	6.10	6.00	6.00	7.55	10.75	10.75	12.45	12.75
Seattle	6.00[4]	6.15[2]	8.40[2]	6.85[4]	....	6.35[4]	6.20[4]	6.35[4]	8.50[14]	....	11.60[18]	....	13.60[18]
St. Louis	5.48	6.26	7.18	5.43	6.68–7.54	5.73	5.58	5.43	6.08	9.56	9.88	11.03	11.33
St. Paul*	5.71	6.51	7.41	5.66	6.16–6.82	5.96	5.81	5.66	6.31	9.81	10.11	11.26	11.56

BASE QUANTITIES: (*Standard unless otherwise keyed on prices.*) Hot-rolled sheets and strip, hot rolled bars and bar shapes, structural shapes, plate, galvanized sheets and cold-rolled sheets: 2000 to 9999 lb. Cold-finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb.

All HR products may be combined to determine quantity bracket. All galvanized sheets may be combined to determine quantity bracket. CR sheets may not be combined with each other or with galv. sheets to determine quantity bracket.

Exceptions:
(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 to 5999 lb; (6) 1000 lb and over; (7) 500 to 1499 lb; (8) 400 lb and over; (9) 400 to 9999 lb; (10) 500 to 9999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 9999 lb; (16) 6000 lb and over; (17) up to 1999 lb; (18) 1000 to 4999 lb; (19) 1500 to 3499 lb; (20) CR sheets may be combined for quantity; (21) 3 to 24 bundles.

PIG IRON PRICES

Dollars per gross ton. Delivered prices do not include 3 pct tax on freight.

PRODUCING POINT PRICES						DELIVERED PRICES (BASE GRADES)							
Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Producing Point	Rail Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	46.00	46.50	49.00	49.50	.....	Boston	Everett	$0.50 Arb.	.....	50.50	51.00	.....	.....
Birmingham	41.88	42.38	.....	.....	.....	Boston	Steelton	6.90	.....	.....	.....	.....	60.90
Buffalo	46.00	46.50	47.00	.....	.....	Brooklyn	Bethlehem	4.29	.....	52.79	53.29	53.79	.....
Chicago	46.00	46.50	46.50	47.00	.....	Cincinnati	Birmingham	6.70	48.58	49.08	.....	.....	.....
Cleveland	46.00	46.50	46.50	47.00	51.00	Jersey City	Bethlehem	2.65	.....	51.13	51.63	52.13	.....
Daingerfield, Tex.	41.50	42.00	42.00	.....	.....	Los Angeles	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Duluth	46.00	46.50	46.50	47.00	.....	Mansfield	Cleveland-Toledo	3.33	49.33	49.83	49.83	50.33	54.33
Erie	46.00	46.50	46.50	47.00	.....	Philadelphia	Bethlehem	2.39	50.39	50.89	51.39	51.89	.....
Everett	.....	50.50	51.00	.....	.....	Philadelphia	Swedeland	1.44	49.44	49.94	50.44	50.94	.....
Granite City	47.90	48.40	48.90	.....	.....	Philadelphia	Steelton	3.09	.....	.....	.....	.....	57.09
Ironton, Utah	46.00	46.50	.....	.....	.....	Rochester	Buffalo	2.63	48.63	49.13	49.63	.....	.....
Pittsburgh	46.00–51.00	46.50–49.50	46.50–49.50	47.00–50.00	.....	San Francisco	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Geneva, Utah	46.00	46.50	.....	.....	.....	Seattle	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Sharpsville	46.00	46.50	46.50	47.00	.....	St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....
Steelton	46.00	46.50	49.00	49.50	54.00	Syracuse	Buffalo	3.58	49.58	50.08	50.58	.....	.....
Struthers, Ohio	46.00	.....	.....	.....	.....								
Swedeland	46.00	46.50	49.00	49.50	.....								
Toledo	46.00	46.50	46.50	47.00	.....								
Troy, N. Y.	46.00	46.50	49.00	.....	54.00								
Youngstown	46.00	46.50	46.50	47.00	.....								

Producing point prices are subject to switching charges; silicon differential (not to exceed 50c per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 38c per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50c per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.01 to 6.50 pct C/L per g.t., f.o.b. Jackson, Ohio—$57.00; f.o.b. Buffalo, $58.25. Add $1.00 per ton for each additional 0.50 pct Si up to 17 pct. Add 50c per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus $60.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, $68.56. High phosphorus charcoal pig iron is not being produced.

FRESH OUT OF AIR, SIR?

Call on *R-C dual-ability* to move air or gas in any quantities for industrial uses

When you have a job of handling gas or air, in quantities from 5 cfm to 100,000 cfm, Roots-Connersville will do it efficiently and economically. With many sizes and types, we can match blowers, exhausters and gas pumps closely to the job, to reduce first cost and operating costs.

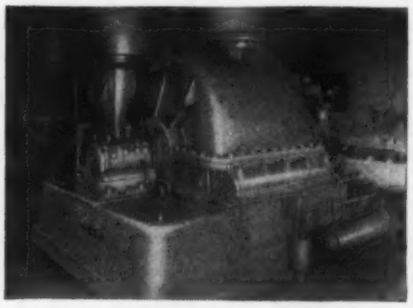
R-C *dual-ability* offers you the exclusive, *dual* choice between Centrifugal and Rotary Positive designs. You can select single-stage or multi-stage units, from our standard lines, with flexibility as to drives and other accessories to meet your needs.

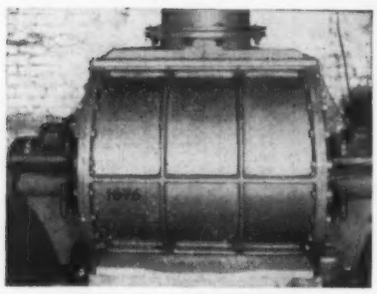
To aid in your specifications, our air-and-gas specialists are at your service. With nearly a century of experience behind them, they can help you solve almost any problem of handling air or gas.

ROOTS-CONNERSVILLE BLOWER CORPORATION
508 Ohio Avenue, Connersville, Indiana

CENTRIFUGAL

Battery of five Centrifugal gas units in steel mill. Capacities: 3-stage exhausters, 18,000 cfm each; 5-stage boosters, 20,400 cfm each.





Foundry installation of Type RCS Rotary Positive Blower. Capacity 4,400 cfm.

ROTARY

ROOTS-CONNERSVILLE

BLOWER BUILDERS SINCE 1854

ONE OF THE DRESSER INDUSTRIES

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts, f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)
Base discount

Machine and Carriage Bolts

	Pct Off List Less Case	C.
½ in. & smaller x 6 in. & shorter	27	38
9/16 & ⅝ in. x 6 in. & shorter	29	40
¾ in. & larger x 6 in. & shorter	26	37
All diam, longer than 6 in.	22	34
Lag, all diam, longer than 6 in.	28	39
Lag, all diam x 6 in. & shorter	30	41
Plow bolts	40	—

Nuts, Cold Punched or Hot Pressed

(Hexagons or Square)

½ in. and smaller	25	37
9/16 to ⅝ in.	23	35
¾ to 1½ in. inclusive	23	35
1⅝ in. and larger	16	29

Semifinished Hexagon Nuts

(Less case lots)

	Pct Off List Reg	Hvy	Lt
½ in. and smaller	41	35	41
9/16 to ⅝ in.	36	30	36
¾ to 1½ in.	31	27	33
1⅝ in. and larger	21	17	..

In full case lots, 15 pct additional discount.

Stove Bolts

	Pct Off List
Packaged, steel, plain finish	63
Packaged, plated finish	50
Bulk, plain finish**	69*

* Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

** Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Large Rivets

(½ in. and larger)
Base per 100 lb

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa. $7.25

Small Rivets

(7/16 in. and smaller)
Pct Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham 43

Cap and Set Screws

(In bulk)	Pct Off List
Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright	60
¼ in. through ⅝ in. x 6 in. and shorter high C heat treated	54
Milled studs	23
Flat head cap screws, listed sizes	24
Fillister head cap, listed sizes	43
Set screws, sq head, cup point, 1 in. diam and smaller x 6 in. and shorter	59

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.50¢
0.41 to 0.60 carbon	5.95¢
0.61 to 0.80 carbon	6.55¢
0.81 to 1.05 carbon	8.50¢
1.06 to 1.35 carbon	10.80¢

Worcester, add 0.30¢.

LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports)

	Per gross ton
Old range, bessemer	$8.10
Old range, nonbessemer	7.95
Mesabi, bessemer	7.85
Mesabi, nonbessemer	7.70
High phosphorus	7.70

After Jan. 25, 1950, increases or decreases in Upper Lake raff freight, dock handling charges and taxes are for buyers' account.

ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb
GRAPHITE		
17, 18, 20	60, 72	17.00¢
8 to 16	48, 60, 72	17.00¢
7	48, 60	18.64¢
6	48, 60	19.65¢
4, 5	40	20.48¢
3	40	21.53¢
2½	24, 30	22.05¢
2	24, 30	24.15¢
CARBON		
40	100, 110	7.65¢
35	65, 110	7.65¢
30	65, 84, 110	7.65¢
24	72 to 104	7.65¢
20	84, 90	7.65¢
17	60, 72	7.65¢
14	60, 72	8.16¢
10, 12	60	8.42¢
8	60	8.67¢

CLAD STEEL

Base prices, cents per pound, f.o.b. mill

Stainless-carbon	Plate	Sheet
No. 304, 20 pct,		
Coatesville, Pa. (21)	*26.50	
Washgtn, Pa. (39)	*26.50	
Claymont, Del. (29)	*26.50	
Conshohocken, Pa. (26)		*24.00
New Castle, Ind. (55)	*26.50	*25.50
Nickel-carbon		
10 pct, Coatsville (21)	31.00	
Inconel-carbon		
10 pct, Coatesville (21)	39.00	
Monel-carbon		
10 pct, Coatsville (21)	32.00	
No. 302 Stainless-copper-stainless, Carnegie, Pa. (60)		75.00
Aluminized steel sheets, hot dip, Butler, Pa. (7)		7.75

* Includes annealing and pickling, or sandblasting.

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.00
18	4	1	—	5	$1.565
18	4	2	—	—	$1.13
1.5	4	1.5	8	—	71.5¢
6	4	2	6	—	76.5¢

High-carbon-chromium	57.5¢
Oil hardened manganese	32¢
Special carbon	29.5¢
Extra carbon	24.5¢
Regular carbon	21¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

COKE

	Net Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	$14.00 to $14.50
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	$16.00 to $16.50
Foundry, oven coke	
Buffalo, del'd	$24.00
Chicago, f.o.b.	21.00
Detroit, f.o.b.	20.40
New England, del'd	23.40
Seaboard, N. J., f.o.b.	22.00
Philadelphia, f.o.b.	21.25
Swedeland, Pa., f.o.b.	21.20
Painesville, Ohio, f.o.b.	21.90
Erie, del'd	$21.04 to 21.25
Cleveland, del'd	22.62
Cincinnati, del'd	22.71
St. Paul, f.o.b.	21.00
St. Louis, del'd	22.18
Birmingham, del'd	20.20

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill. Base price, per ton net; Effective CaF, content:

70% or more	$37.00
60% or less	34.00

Prices Continued on Page 128

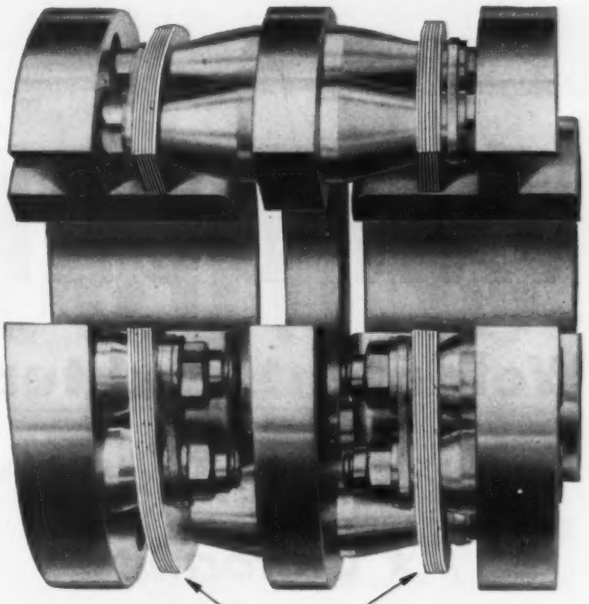
THOMAS *Flexible* ALL METAL **COUPLINGS**

FOR POWER TRANSMISSION • REQUIRE NO MAINTENANCE

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

Thomas Couplings have a wide range of speeds, horsepower and shaft sizes: ½ to 40,000 HP — 1 to 30,000 RPM.

Specialists on Couplings for more than 30 years



PATENTED FLEXIBLE DISC RINGS

BACKLASH FRICTION WEAR and CROSS-PULL are eliminated LUBRICATION IS NOT REQUIRED!

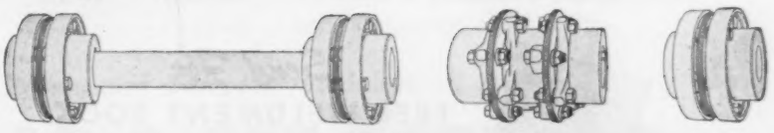
THE THOMAS PRINCIPLE GUARANTEES PERFECT BALANCE UNDER ALL CONDITIONS OF MISALIGNMENT.

• • •

NO MAINTENANCE PROBLEMS.

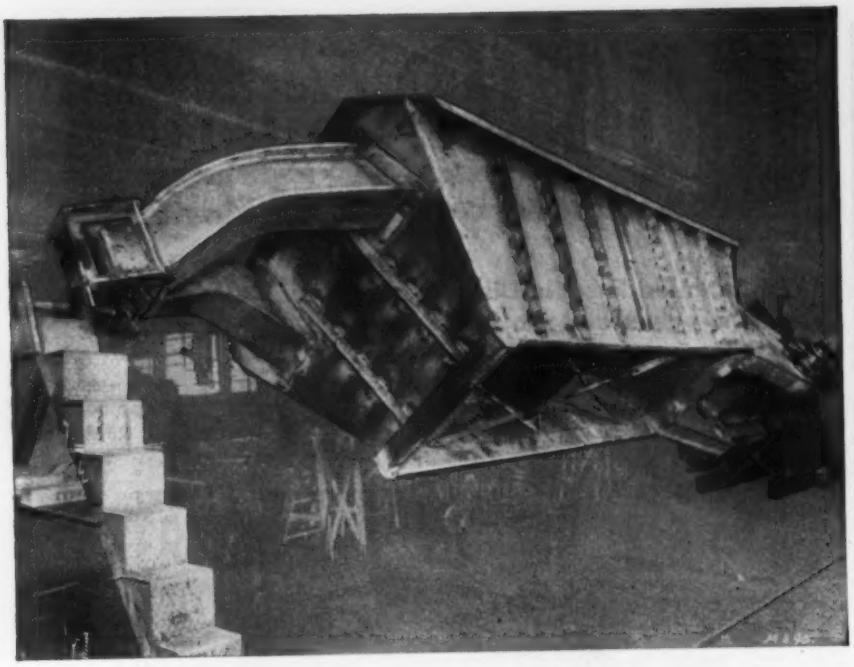
• • •

ALL PARTS ARE SOLIDLY BOLTED TOGETHER.



Write for the latest reprint of our Engineering Catalog.

THOMAS FLEXIBLE COUPLING CO.
WARREN, PENNSYLVANIA



VAN DORN

Weldments Feature

★ *Strength*

★ *Uniformity*

★ *Economy*

Yes, Van Dorn Weldments are widely known for their outstanding quality—for they are backed by Van Dorn's complete fabricating facilities . . . experienced design engineers . . . specially trained workmen . . . 77 years' experience in metal working.

Consult us about your requirements—no obligation, of course. The Van Dorn Iron Works Co., 2685 East 79th Street, Cleveland 4, Ohio.

Send For

FREE WELDMENT BOOK

● *Profusely illustrated; describes the many advantages of weldments, and Van Dorn's extensive facilities.*

REFRACTORIES

Fire Clay Brick *(F.o.b. works)*

	Carloads, Per 1000
First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5)	$86.00
No. 1 Ohio	80.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	80.00
No. 2 Ohio	72.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	14.00

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$86.00
Childs, Pa.	90.00
Hays, Pa.	91.00
Chicago District	95.00
Western Utah and Calif.	101.00
Super Duty, Hays, Pa., Athens, Tex., Chicago	106.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	15.00
Silica cement, net ton, bulk, Hays, Pa.	17.00
Silica cement, net ton, bulk, Ensley, Ala.	16.00
Silica cement, net ton, bulk, Chicago District	16.00
Silica cement, net ton, bulk, Utah and Calif.	22.50

Chrome Brick *Per Net Ton*

Standard chemically bonded, Balt., Chester	$69.00

Magnesite Brick

Standard, Baltimore	$91.00
Chemically bonded, Baltimore	80.00

Grain Magnesite *St. ⅜-in. grains*

Domestic, f.o.b. Baltimore, in bulk fines removed	$56.00 to $57.00
Domestic, f.o.b. Chewelah, Wash., in bulk	33.00
in sacks	38.00

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢	$13.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags	7.4¢ to 9.0¢
Canadian sponge iron, del'd, in East	10.00¢
Domestic sponge iron, 98+% Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe	36.0¢ to 39.5¢
Electrolytic iron unannealed, minus 325 mesh, 99+% Fe	43.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe	70.0¢ to $1.35
Aluminum	29.00¢
Brass, 10 ton lots	27.75¢ to 31.25¢
Copper, electrolytic	9.25¢ plus metal value
Copper, reduced	9.75¢ plus metal value
Cadmium, 100-199 lb	$2.95
Chromium, electrolytic, 99% min., and quantity	$3.50
Lead	6.5¢ plus metal value
Manganese	52.00¢
Molybdenum, 99%	$2.65
Nickel, unannealed	75.5¢
Nickel, annealed	81.5¢
Nickel, spherical, unannealed	78.5¢
Silicon	24.00¢
Solder powder	6.5¢ to 8.5¢ plus met. value
Stainless steel, 302	75.00¢
Tin	11.00¢ plus metal value
Tungsten, 99%	$2.90
Zinc, 10 ton lots	20.50¢ to 23.85¢

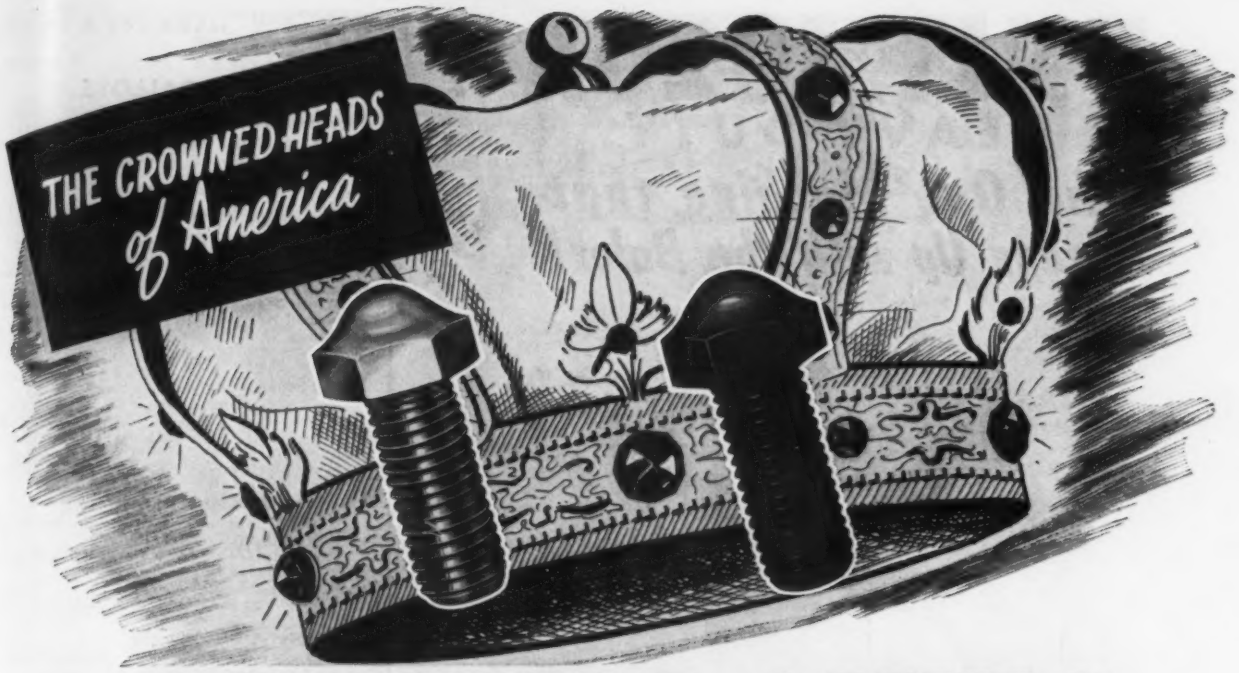
CAST IRON WATER PIPE

Per net ton

6 to 24-in., del'd Chicago	$91.80 to $95.30
6 to 24-in., del'd N. Y.	91.00 to 92.00
6 to 24-in., Birmingham	78.00 to 82.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less	$108.50 to $113.00

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

Prices Continued on Page 130



SHINYCROWNS

THE KING OF HEX HEADS

A Crowning Achievement in Cap Screw Design

FOR GENERAL ORNAMENTAL USE

SHINYCROWNS — Low Carbon — Bright Finish — give that "New Look" to assembly where appearance, ultra-quality, and sales interest are paramount. For that "finishing touch" to your assembly, specify SHINYCROWNS—Low Carbon—the last word in ornamental Hexagon Head design.

SHINYCROWNS — Low Carbon — Bright Finish — are furnished in C-1018 steel in sizes ¼" diameter through ½" diameter inclusive, in both coarse and fine threads, in plain, zinc, cadmium, nickel, or chrome plate. Price governed by quantity desired—bulk shipments only.

FOR SPECIAL ORNAMENTAL USE

SHINYCROWNS — High Carbon — Black Finish — give that "New Look" appearance. Double Heat-Treated, they assure added strength where extra toughness is required. For that "finishing touch" to your assembly, specify SHINYCROWNS — High Carbon — the last word in ornamental Hexagon Head design.

SHINYCROWNS — High Carbon — Black Finish — are furnished in C-1038 steel — Double Heat-Treated — in sizes ¼" diameter through ½" diameter inclusive, in both coarse and fine threads, in plain, zinc, cadmium, nickel, or chrome plate. Price governed by quantity desired — bulk shipments only.

Complete Information, Prices, and Samples furnished on request.

The FERRY CAP & SET SCREW Co.

2157 SCRANTON ROAD • • • • • CLEVELAND 13, OHIO

Pioneers and Recognized Specialists Cold Upset Screw Products since 1907

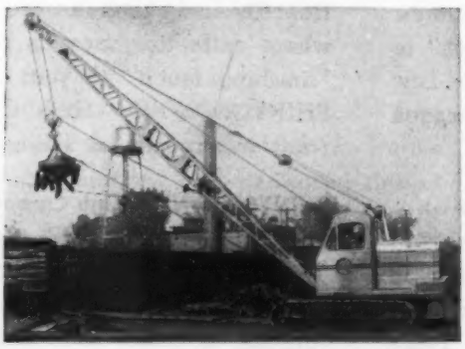
CAP AND SET SCREWS • CONNECTING ROD BOLTS • MAIN BEARING BOLTS • SPRING BOLTS AND SHACKLE BOLTS • HARDENED AND GROUND BOLTS SPECIAL ALLOY STEEL SCREWS • VALVE TAPPET ADJUSTING SCREWS • AIRCRAFT ENGINE STUDS • ALLOY STEEL AND COMMERCIAL STUDS • FERRY PATENTED ACORN NUTS

UNIT 1020A
HEAVY-DUTY
The One Machine that Keeps Up with the Baler!

UNIT 1020A . . . Perfectly balanced . . . All-around stability . . . Handles a 45 inch magnet with ease.

UNIT 1020A handling scrap in a mid-west industrial plant. Efficient, low cost operation.

The UNIT 1020A is designed and built for heavy-duty scrap yard operation. Extra long crawlers, wider axles and shoes, plus additional counterweight, provide perfect balance and all-around stability. Tipping strains are absorbed by hook-rollers. Owners using 45 inch magnets find them easy to handle. With full loads, there's no weaving or rocking. It has power and stability without bulk . . . fast on the hoist . . . easy on the swing. To modernize your yard — start with a UNIT 1020A.



The UNIT 1020A handles heavy steel, baled or loose scrap with day-in and day-out dependability.

UNIT CRANE & SHOVEL CORP.
6517 W. BURNHAM ST.
MILWAUKEE 14, WIS., U. S. A.

A 5457-½A

Continued

FERROALLOYS

Ferromanganese

78-82% Mn. maximum contract base price, gross ton, lump size.

F.o.b. Birmingham	$174
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont.	$172
F.o.b. Johnstown, Pa.	$174
F.o.b. Sheridan, Pa.	$172
F.o.b. Etna, Clairton, Pa.	$176

$2.00 for each 1% above 82% Mn, penalty, $2.15 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.45
Ton lots	12.05

Spiegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$64.00	$65.00
Pgh. or Chicago	65.00	66.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, packed	35.5
Ton lots	37.0

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	28
Ton lots	30
Less ton lots	32

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb. of contained Mn. 18.15¢

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, delivered.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	25.25	27.10	28.30
0.10% max. C	24.75	26.60	27.80
0.15% max. C	24.25	26.10	27.30
0.30% max. C	23.75	25.60	26.80
0.50% max. C	23.25	25.10	26.30
0.75% max. C, 7.00% max. Si	20.25	22.10	23.30

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	8.95
Ton lots	10.60
Briquet, contract basis carlots, bulk delivered, per lb of briquet.	10.30
Ton lots	11.90

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $77.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $73.50. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	20.70
97% Si, 1% Fe	21.10

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 1 lb Si briquets.

Carload, bulk	6.30
Ton lots	7.90

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

25% Si	17.00	75% Si	13.50
50% Si	11.30	85% Si	14.65
90-95% Si			16.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast Turnings	Distilled
Ton lots	$2.05 $2.95	$3.75
Less ton lots	2.40 3.30	4.55

Prices Continued on Page 132

Good plumber + good tools + GOOD PIPE = GOOD JOB!

7 POINTS OF UNIFORM GOODNESS IN YOUNGSTOWN STEEL PIPE

- uniform ductility
- uniform lengths
- uniform threading
- uniform weldability
- uniform wall thickness and size
- uniform strength and toughness
- uniform roundness and straightness

WHEN your die is sharp and true, you enjoy cutting threads on Youngstown pipe. That's because it's so uniformly soft, so round and uniform in size. It has the toughness and strength, too, that make your threads full and well formed, clean and sharp. The name "Youngstown," rolled into every length, tells you it's GOOD PIPE.

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Youngstown STEEL PIPE

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel

General Offices — Youngstown 1, Ohio

Export Office-500 Fifth Avenue, New York

PIPE AND TUBULAR PRODUCTS · WIRE · ELECTROLYTIC TIN PLATE · COKE TIN PLATE · HOT AND COLD FINISHED CARBON AND ALLOY BARS · RODS · SHEETS · PLATES · CONDUIT · RAILROAD TRACK SPIKES

This installation required built-up plate, welded box construction . . . fish-belly design . . . enclosed cab . . . complete weatherproofing . . . main and auxiliary hoist units (see illustration below).

How to get the most CRANE for your money

When you buy a crane, make sure you select the machine best qualified to do *your* job! The work for a crane in your plant probably differs from that in your neighbor's plant. The general crane rating and other details which are perfect for his handling problems may not be at all suitable for yours. To get the most crane for your money, let *crane duty* determine *your* choice.

It isn't entirely a matter of capacity. Travel speeds, hoisting speeds, frequency of use—all call for special consideration in the choice of a crane. That's why it's wise to discuss your problem with a Shepard Niles specialist. It's much less costly to install the *right* equipment in the beginning—than to make important changes later.

MAIN AND AUXILIARY HOISTING UNIT—Recommended for duty where there is a wide range in the capacity handled. Auxiliary hoist handles lighter loads at greater speeds than can be obtained with the main hoist.

It costs you nothing to get the facts. May we place our extensive material-handling experience at your disposal?

Shepard Niles

CRANE & HOIST CORPORATION

Makes and sells all three lifting tools for airborne shop loads

356 SCHUYLER AVE. • MONTOUR FALLS, N. Y.

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max Si.)

0.06% C	28.75	0.20% C	27.75
0.10% C	28.25	0.50% C	27.50
0.15% C	28.00	1.00% C	27.25
2.00% C			27.00
65-69% Cr, 4-9% C			20.50
62-66% Cr, 4-6% C, 6-9% Si.			21.25

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contrast price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% Max. C.	$1.00
0.50% max. C	1.05
.00 min. C	1.04

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 20.50¢ per lb of contained Cr plus 11.30¢ per lb of contained Si.

Bulk 1-in. x down, 20.65¢ per lb contained Cr plus 11.50¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.35
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	15.75¢
Less ton lots	17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	17.00¢
Ton lots to carload packed	18.00¢
Less ton lots	19.50¢

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Prices Continued on Page 134

LOOKS right!

Beautifully constructed of gleaming stainless steel, it looks and performs like a thoroughbred.

WORKS right!

Made stronger, lighter and safer and it will give you many years of trouble-free operation.

PRICED right!

You'll be amazed at how inexpensively you can guard against fire with this superior extinguisher.

Kidde's New 2½ Gallon

WET CHEMICAL STAINLESS STEEL FIRE EXTINGUISHER

gives you more for your money!

All stainless steel shell means greater strength, lighter weight, safer construction, years of reliable service . . . with the same instantaneous action and sure protection against fire that Kidde has always given. Transparent nozzle lets you see at a glance that nozzle passage is clear. Permanent nameplate with directions can *not* fall off.

Take your choice of clear water, soda-acid or foam type and get all the advantages of Kidde construction and Kidde "know how." Also available in an Anti-Freeze type, made of silicon bronze, which eliminates the danger of corrosion that usually results from the Anti-Freeze solution.

Ask your Kidde Dealer or write us for complete information today.

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OVER ONE HUNDRED YEARS OF CONTINUOUS SERVICE. ROUNDS, SQUARES, FLATS, HEXAGONS, OCTAGONS

BILLETS AND FORGINGS FOR PRODUCTION, TOOL ROOM AND MAINTENANCE REQUIREMENTS.

Get your
STANDARD ALLOY STEEL
from the same reliable source
as HY-TEN ALLOY STEEL

Although perhaps best known for our *special* HY-TEN Alloy Steels, Wheelock, Lovejoy carries a full line of *standard* steels *in stock* for fast, dependable service from our warehouses. These standard grades include: C-1117, A4615, E4617, A4620, A4140, A4142, A4145, A4150, A4340, etc.

There are many advantages in using a single source for all your alloy steel needs, and Wheelock, Lovejoy offers these extra services — modern heat treating, testing and cutting, plus prompt delivery of blocks, rings, spindles and other forged shapes to your exact specifications.

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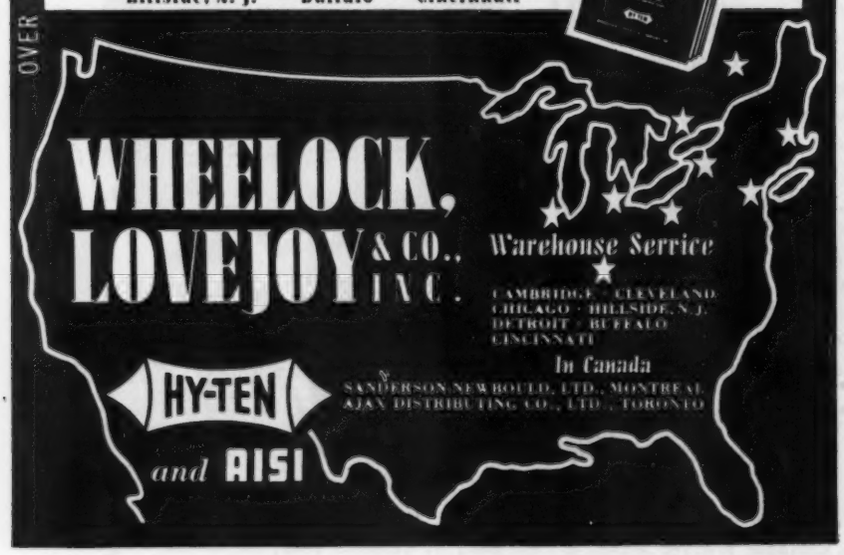


Other Ferroalloys

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.
- Carload ..... 7.65¢
- Ton lots ..... 9.05¢

Calcium molybdate, 45-40%, f.o.b. Langeloth, Pa., per pound contained Mo ..... 96¢

Ferrocolumbium, 50-60%, 2 in x D, contract basis, delivered, per pound contained Cb.
- Ton lots $3.50
- Less ton lots 3.55

Ferro-Tantalum-columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta $2.67

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo $1.13

Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton $65.00
- 10 tons to less carload 75.00

Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.28

Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.40
- Less ton lots $1.45

Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $167.00

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered $2.25

Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained V.
- Openhearth $2.90
- Crucible 3.00
- High speed steel (Primos) 3.10

Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. ..... 95¢
- bags, f.o.b. Washington, Pa., Langeloth, Pa. ..... 94¢

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound
- Carload, bulk, lump ..... 11.00¢
- Ton lots, bulk, lump ..... 11.50¢
- Less ton lots, lump ..... 12.25¢

Vanadium pentoxide, 88-92% V_2O_5, contract basis, per pound contained V_2O_5 ..... $1.20

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
- Ton lots ..... 21.00¢

Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.
- Carload, bulk ..... 6.60¢

Boron Agents

Contract prices per lb of alloy, del.

Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B $4.25

Bortam, f.o.b. Niagara Falls
- Ton lots, per pound ..... 45¢
- Less ton lots, per pound ..... 50¢

Carbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4.5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed.
- Ton lots, per pound ..... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots $1.20
- F.o.b. Wash., Pa.; 100 lb, up
- 10 to 14% B ..... .75
- 14 to 19% B 1.20
- 19% min. B 1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.
- No. 1 ..... 93¢
- No. 6 ..... 63¢
- No. 79 ..... 45¢

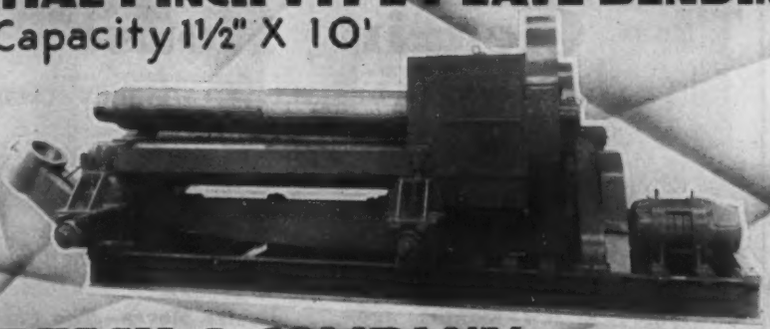
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, delivered.
- Ton lots $1.46
- Less ton lots 1.57

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.
- Less ton lots $1.80

Silcaz, contract basis, delivered.
- Ton lots ..... 45.00¢

INITIAL PINCH TYPE PLATE BENDING ROLL

Capacity 1½" X 10'



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Light and heavy machinery for all classes of sheet metal, plate and structural work

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SPECIAL PARTS

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made to your order
ACCURACY IN DETAIL ★ SPEEDY SHIPMENTS

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CHUCKING MACHINES
Four, Five, Six, Eight Spindles • Work and Tool Rotating Type
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Use this Electric Motor Clam Shell for rehandling bulk materials in Industrial Plants.
THE HAYWARD CO., 40-50 Church St., N.Y.

This is the place for you,
if you want your products before the men who do the buying in the metalworking industry. The Iron Age.

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STEEL PRESS BRAKES and HAND and POWER BENDING BRAKES

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springs
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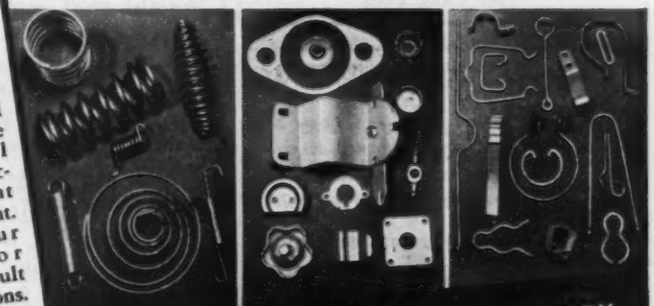

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ELECTRIC POWER EQUIPMENT
A.C. MOTORS
3 phase — 60 cycle

SLIP RING

Qu.	HP	Make	Type	Volts	Speed
1	700	Whse.	CW	2280	900
1	500	G.E.	IM	2300	450
1	500	G.E.	IP	550	505
2	350	Whse.	C.W.	2200	900
1	350	G.E.	MT-442Y	2300/4000	253
1	300	All. Ch.		2300	505
1	300	G.E.	IP	443/2300	705
5	300	Al. Ch.		440/2200	705
1	250 (NEW)	G.E.	M-5768-TEFC	440	600
1	250	G.E.	MT-424Y	4000	257
1	250	G.E.	MT-5598	2200	1800
2	125	G.E.	IM	220	1175
4	125	G.E.	MT-566Y	440/2200	435
3	100	G.E.	IM	440	600

SQUIRREL CAGE

2	450	Whse.	CS-1420	2300/4150	354
1	200	G.E.	IK	550	505
1	200	G.E.	KT-557	440	1800
1	200/100	G.E.	KT-557	440	1180/885
8	150	Whse.	CS-8568	440	880
5	125	Al. Ch.	ARW	2200	1750
1	125	G.E.	KF-6328-Z	440/2200	3585
1	125	Whse.	MS	440	485
1	125 (NEW)	G.E.	KF-TEFC	440	1190

SYNCHRONOUS

2	3500	G.E.	TS	2300	257
1	2100	G.E.	ATI	4600	514
3	2000	Whse.		2300	120
1	1470	Whse.		2300/4600	900
1	1000	Whse.	Mill	2300	189.5
1	900	Al. Ch.		2200	150
1	600	Whse.		440	360
2	350	G.E.	TS	2200	150
1	320	G.E.	ATI	2300	600
1	300	G.E.	ATI	440	720

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Slip Ring MOTORS

2—500 H.P. General Electric Type I form M, 3 ph. 60 cy. 2200 volt, 450 R.P.M.
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Each Complete with Primary Oil Switch and Magnetic Secondary Controllers.

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1—CLEVELAND PRESS G.B.I. 60 Ton Model 91 Air Cushion Geared Flywheel W/M
1—74½ BLISS POWER PRESS 90 Ton Open Back C Frame W/M
1—20B BLISS INCL. POWER PRESS 1" Stroke Dbl. Roll Feed, Scrap Cutter W/M
1—KEARNEY & TRECKER "SIMPLEX" MILLER Nos. 1218
1—CINCINNATI VERTICAL MILLER Mod. 08
1—HENDEY 20" Crank SHAPER Rapid Traverse Motor Driven
3—WATERBURY FARREL COINING PRESSES #1 125 Ton Cap.
1—SLEEPER & HARTLEY UNIV. SPRING COILER
1—#2 BAKEWELL TAPPER New 1944
1—ROOT 16 SPINDLE HYDR. DRILL PRESS
1—HALL PLANETARY THREAD MILLER Model B
4—NATIONAL RIVETERS Model B 9/64 x ⅛" Cap.
4—H&G DOUBLE SPINDLE THREADERS up to 1" cap. Die Heads, Motorized, Late Type
SEABOARD STEEL COMPANY, INC., New Haven, Conn.

The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

War Scare—The war scare has thrown the Detroit used machinery market into a round of activity that could hardly have been anticipated a few months ago. Building on top of a demand that has been growing steadily since the first of the year, the new volume precipitated by the Korea situation has sent buyers looking for equipment to: (a) Increase present production; or (b) prove useful in the event of a large scale rearmament program. Up to the present time the number of frightened buyers has not been substantial, but the run on the used machinery bank could become a serious problem.

Rising Prices — Another factor tending to increase activity in the used machinery industry in the Detroit area is the persistent threat of rising prices. While upward price changes are not always apparent, it is agreed that each time equipment is bought the price tags are a little higher. No one here anticipates any easing of the price situation until the present war threat subsides.

Detroit Activity — The Korean inspired, increased activity in this area has resulted in a strong demand for most lines of equipment. The most desired items are in the press equipment and screw machine category. There has also been a noticeable pickup in the demand for toolroom equipment during the past few weeks.

Newark Exports—Foreign business from this city is said to be going at a fair rate. Because of red tape, activity to Europe has slowed somewhat. However, sales to Israel and Mexico are still being transacted actively. General purpose machinery is going to Israel. This includes toolroom items and sheet metal equipment but, so far, no sizeable amounts of production items. Going to Mexico are heavy industry units such as rolls, punches, shears, press brakes and the like.

Dealer Moves—The Parker Machine Co. of New York is moving its offices and warehouse facilities into a 10,000 sq ft building located at 158 Pioneer St., corner Imlay St., Brooklyn 31. The building, located near the Brooklyn-Battery Tunnel exit, is equipped with an overhead crane to handle heavy machine tools.

Next NISA Convention — San Antonio, Tex., has been selected as the site of the 1950-1951 convention of the National Industrial Service Assn. The date has been tentatively set for Apr. 15-18, 1951. Ed Jones of Amarillo, Tex., will be chairman of the committee in charge of arrangements.

Newark Demand — Machinery activity here is showing a strong demand for 3-4-year-old production tools and late type toolroom items. Actively moving are turret lathes, automatic screw machines, milling machines, and large grinders.

Newark Prices—Prices for used machine tools in this area are generally high. On the most part, this is caused by the fact that dealers at auction sales are paying as high as 50 pct of new for certain machines.

Pocket Electrical Catalog—Forty-four page photo illustrated pocket catalog lists partial list of rebuilt electrical items. Included are specifications on motors, generators, transformers, diesel generator sets, MC sets, platers, frequency chargers, control equipment, air circuit breakers, oil switches, compressors, and many others. All items are guaranteed for one year. *Electric Equipment Co.*

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